

# FLIGHT

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

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## Flight.

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## EDITORIAL COMMENT.

**D**URING the past week-end there has been enough liveliness in the air between sunset and sunrise to bring home very acutely to the Government the great need for that energetic action in regard to the placing of our activities in the air upon a broader basis, which is being so dramatically urged upon them from all sides. That very great efforts have been and still greater efforts are being made to cope with the position and make up for lost time may be accepted. In fact the protection "liveliness" is, to our own knowledge, not being confined to the air, but has its adjunct very strongly developed on *terra firma*, to the serious nonplussing of the German strafers. The disaster to "L. 15" is without doubt due to the over-confident tactics of the commander of this airship. Immunity from serious attack, even at a comparatively low altitude, had been assumed by the crew, when passing over the country-side, on the look-out for landmarks to guide them to the objects which they are so anxious to identify and destroy. The sudden and unexpected reception accorded the airship upon this occasion, ending in disaster to the visitor, will probably bring about a return by future raiders to the keeping at a much safer height, as was their custom in the earlier bombing expeditions which initiated this phase of the Huns' warfare. Even more fatalities than ever may therefore be looked for amongst ordinary citizens, including women and children, as it is the impossibility at such altitudes as they maintain, of, even in a small degree, discerning where they are, or where their poisonous and destructive missiles are likely to strike, that has accounted for all the deaths and injuries which the German air fleet has hitherto inflicted upon innocent victims. Not that we imagine the Huns care two straws how many of our

womenfolk and their offspring they destroy. This end of the weapon they regard as having great moral effect. And they are right, but scarcely in the way they imagine. The exact opposite is the case. At the same time, the German High Command must be credited with ordinary common sense, and if their messengers of the air are able preferably to locate such points of military value as munition factories or stores, important camps, &c., there can hardly be a second opinion that they would regard the infliction of damage in this direction as sufficient compensation for even sparing non-military objects. As it is, their aims are of the wildest description with the disastrous result of sacrificing innocent lives. Putting this tragic aspect of the visits aside, nothing could be more ludicrous than the details given out by the German official bureau, of what their emissaries claim to have effected. Possibly there may be something in the suggestion which has been put forward, that the basis for these mendacious reports is not quite so "innocent" as it appears. It is well known that the German air services have had specially generous treatment meted out to them in the form of decorations, even down to heaps of iron crosses, as witness photographs which are available of whole batches of German pilots who are the proud possessors of this latter appendage. After all, the Zepp's crews can hardly be expected to return with reports that they could distinguish neither habitations nor towns, and that they therefore just unloaded their freightage of explosives at odd intervals as the spirit or whim moved them. It is but natural they should elaborate the great feats which they persuade themselves they believe they have accomplished, and thereby not only gratify the craving of their superiors and of the German people by tales of the strafing of the hated Briton, but earn for themselves at the same time the popularity of the hero and an outward and visible sign of their feats of daring. That the repeated abortive, from a strictly military point of view, attacks harden the

heart of the British people more and more against any compromise with the hellish nation which has run amock in Europe, is at least one satisfactory outcome of the air raids, and we fancy that the visit to Scotland for the first time on Sunday night was extremely opportune in this connection, as having a very wholesome effect upon the views of the unpatriotic minority of Leith strikers, who have in recent days expressed themselves as indifferent whether they have as rulers their own kith and kin or the iron heel of the Hun. The haphazard bombing methods of the Germans brought directly home to them, have given them an opportunity to wonder if they are quite so sure there would be little difference. That one of the marauders has been accounted for this time may give the Germans pause. It is becoming evident that, like our naval blockade, the circle of safety for them is gradually being closed, and provided sufficient energy is maintained in countering their excursions, it should not be very long before these piratical visits become a thing of the past. Well-planned massed aeroplane reprisal tactics against our enemies' centres of activity in addition should do more than anything to bring about a cessation of these inhuman methods of carrying on war.

## Dopes— Poisonous and Otherwise.

Our reference last week to Dope poisoning troubles has brought us many communications, showing the question is one of paramount interest. Moreover, in a letter which we produce under correspondence, attention is drawn to a further case of Tetrachlorethane poisoning in the West Ham district. In dealing with this subject last week we had then no knowledge, nor have we now, what particular brand of dope was the cause of the trouble in that particular instance, and we are in the same position in regard to the case now reported from the London district. Moreover, we are not concerned directly or indirectly with any particular make. One thing, however, is certain, that there should not be one further day's use for these poisonous concoctions. The more so, as it is quite evident that there is little difficulty in supplying the needs of the trade from several quarters with a dope which is free from the objections now raised. Even the one advantage—greater life to the fabric—which, we suggested, the use of dope containing Tetrachlorethane gave, need not be considered, as it would appear from our correspondent's letter that equal efficiency in this respect can be obtained with non-poisonous mixtures. One very serious fact has also emerged, and that is that this very obnoxious ingredient is contained in the "R.A.F." dope, known as D94, which we learn from several sources is being forced upon all manufacturers for use with machines made under Government specification. Further, it is sought, we understand, even to oblige manufacturers of aeroplanes who are supplying the services with very valuable machines of their own design, to use this particular dope. Nothing could be more reprehensible than this, as, to our positive knowledge, not only is non-poisonous dope being already used in certain directions, but there are several dopes which can be supplied in any quantities required, and moreover the authorities know, or ought to know, of these. Proper steps have been taken to bring the advantages of these before those whom it should most concern, but up to the present no official sanction has been given by the authorities for their use. As the dopes permissible for use on Government aircraft are clearly specified by both the Naval and Military authorities—and these include

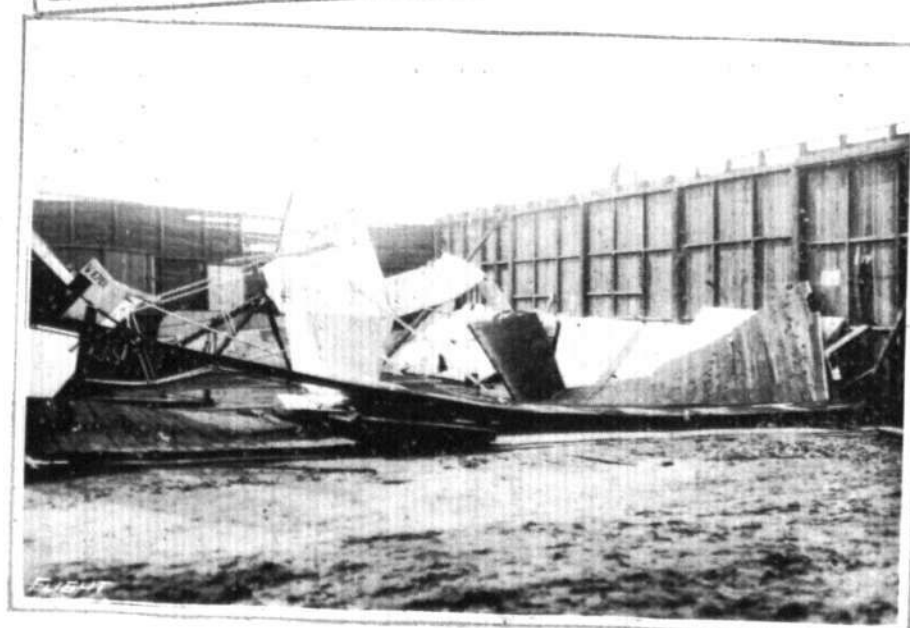
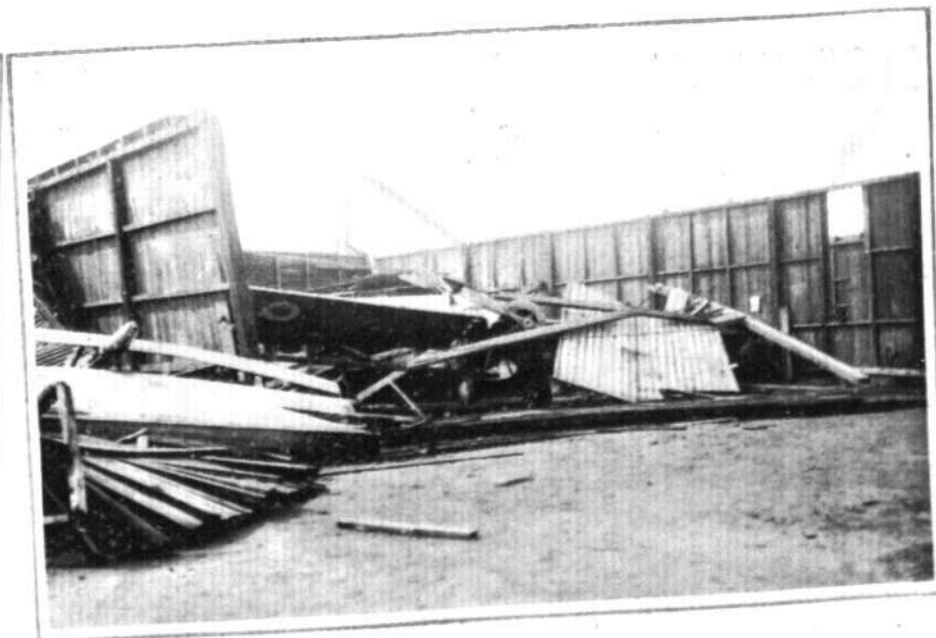
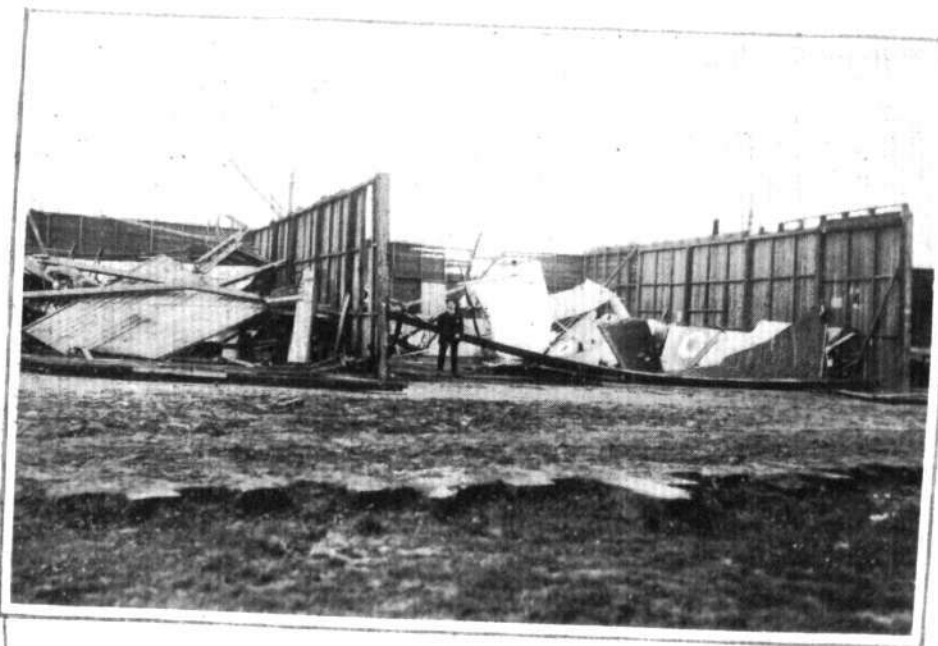
the R.A.F. dope D94, which contains the poisonous Tetrachlorethane—it is not possible for the non-poisonous solutions, referred to above, to be used until officially specified. Such a state of things should no longer be permitted, and although we do not suggest such an official crime as has been promulgated in Parliament lately, it is obvious that if some change is not quickly brought about there should be room for another enquiry as to the reason for such indifference to the loss of life and effect of this process upon the health of the workers whose particular lot falls to this branch of aeroplane making. Here is a clear case where the staff at the call of the Government should be employed in some other direction of far more value at the present time to the nation, as the manufacture and supply, about which there is not the slightest difficulty, of an article like aeroplane dope is a trade proposition pure and simple, and should be entirely outside the scope of such an establishment for experiment and research as the R.A.F. In fact there is no reason why it should be handled by the R.A.F. at all. As to the statement of Mr. Brace in the House of Commons on the 21st, in connection with the question by Mr. Rowlands regarding the Peterborough case, to the effect that "the obstacle to the use of non-poisonous dope is that one of the essential ingredients is not produced in this country at present in sufficient quantities to make it available for the purpose," this would appear to be not in accordance with fact. As we have pointed out above, there are manufacturers ready to supply non-poisonous dope, and the Government authorities know it. Why is it, therefore, that these manufacturers are not given the opportunity of substantiating their offers? The suggested steps which are being taken to supply contractors with a dope made under W.O. supervision "which contains as little tetrachlorethane as possible," therefore, are entirely unnecessary and harmful. Commercial dopes are ready to hand without one particle of this pernicious ingredient, and there can be no earthly excuse for not employing them forthwith, and relieving the already overworked and overworried W.O. and other departments of all anxiety in this respect. Let them drop all attempts, under the abnormal war conditions existing, at surreptitiously grabbing a hold on commercialism—which can only have one meaning, viz., that there may remain when peace "breaks out," a semblance of a claim for vested interests in that direction. Then they will be able to devote every atom of their energies to getting on with the war.

## Settling Down.

That Mr. Pemberton-Billing appreciated the false step he had indulged in the previous week in Parliament, was fairly evident last week when he made his statement, and produced his "murder" evidence. As we said in our last issue, "P.B." had sufficient facts to his hands to force drastic action in regard to developing the air service without resorting to sympathy-wooing tactics as indulged in by him in his first attack. And so it turned out; the list of casualties leaving a very marked impression upon the Members of the House, and opening the way for strong support from a decided majority of the House. The suggestion for the appointment for a Committee was the best way out of a difficult quandary, as it would have been an unpleasant experience from several points of view, to have attempted free discussion of details—whatever they may be—in the general assembly of the House. A small Committee will no doubt be able to sift the bad and indifferent cases from the good, and we shall be surprised if a good many

April 6, 1916.

FLIGHT



The recent blizzard did not spare the Hendon aerodrome, and above are some photographs secured last week, giving an idea of the wreckage amongst some of the sheds and machines.



of the recitals, as originally given, have not to be modified or presented in a very different light than the one in which they were launched upon Parliament. We do not question but that there has been serious negligence in the past, and it should be the work of the Committee to see that their summary of evidence carries with it proper condemnation wherever it is due. We should also like them to take very carefully into consideration and ascertain the exact state of affairs in regard to the correction which the Under-Secretary of State for War in his reply made to a statement by Lord Montagu, to the effect that we had only one engine for every three aeroplanes. As a matter of fact, Mr. Tennant said, there were rather more engines than aeroplanes. If this be a fact, then indeed there is something further seriously amiss with the organisation of our manufacturing powers,

as there should be a far greater supply of machines than of engines to properly fill the requirements of the air services. The wastage of machines is far in excess of the engines, and it would not be too much to say that there should be little short of two to one of machines to engines to ensure full use of the material at our disposal.

How can the authorities under such a state of things possibly justify the holding back from manufacturers of continuous orders for aeroplanes, doling them out in small batches, with, in cases, inexplicable intervals between the completing of one contract and the placing of another? The relative position of engines and machines should without delay be reversed, and we have no manner of doubt that no difficulties in this direction will be found to exist from the manufacturers' side.

## ✱ ✱ ✱ ✱

# The British Air Service

"PER ARDUA AD ASTRA"

*UNDER this heading are published each week the official announcements of appointments and promotions affecting the Royal Naval Air Service and the Royal Flying Corps (Military Wing) and Central Flying School. These notices are not duplicated. By way of instance, when an appointment to the Royal Naval Air Service is announced by the Admiralty it is published forthwith, but subsequently, when it appears in the LONDON GAZETTE, it is not repeated in this column.*

### Royal Naval Air Service.

THE following appeared among the Admiralty announcements of the 30th ult. :—

Late Capt. J. K. Cronyn, Canadian Infantry, entered as Probationary Flight Sub-Lieutenant, for temporary service, and appointed to "President" for R.N.A.S. To date March 1st.

The undermentioned have been entered as Probationary Flight Sub-Lieutenants, for temporary service, and appointed to "President II," additional, for R.N.A.S., all to date April 3rd: S. J. Featherston, L. N. Glaishy, E. Greenwood, W. O. Dickinson, C. P. O. Bartlett, W. E. C. B. C. Forsyth, H. T. Mellings, R. M. Hughes, S. L. Bennett, F. H. Wallers, C. Huddy, and K. J. Paul.

C. de Hoghton entered as Temporary Sub-Lieutenant, R.N.V.R., with seniority March 28th, and appointed to "President," additional, for R.N.A.S. To date March 30th.

THE following appeared among the Admiralty announcements of the 1st inst. :—

Flight Sub-Lieuts. Richard C. Petter, Reginald F. S. Leslie, Harry R. Hopperton, Cyril Tollemache, Wilfrid H. Dunne, Forrester H. M. Maynard, Graham Donald, Francis J. E. Feeny, Reginald M. Everett, John F. Hay, Richard B. Munday, George H. Jackson, Ronald T. H. Duff, John Forgan-Potts, Grahame G. Dawson, Harold G. Henley, Francis J. Linnell and John P. Coleman, promoted to Flight-Lieutenants.

Temporary Flight Sub-Lieuts. Bruno P. H. de Roeper, Robert A. Reid, Bertram C. Bell, Geoffrey R. H. Talbot, promoted to Temporary Flight-Lieutenants; Walter H. E. Campbell and John S. Wheelwright promoted to Flight-Lieutenants; Percy C. D. Douglass promoted to Flight-Lieutenant (temporary).

Robert W. Anderson entered as Probationary Flight Sub-Lieutenant for temporary service, and appointed to "President," additional, for R.N.A.S.

Richard E. Goddard, granted temporary commission as Lieutenant, R.N.V.R., and appointed to "President," for R.N.A.S.

### Royal Flying Corps (Military Wing).

THE following appeared in a supplement to the *London Gazette* issued on the 27th ult. :—

*Memorandum.*—Clarence R. W. Knight, from Inns of Court O.T.C., to be Temporary Second Lieutenant for duty with the R.F.C.; March 19th, 1916.

*Supplementary to Regular Corps.*—Second Lieutenants (on probation) confirmed in their rank: R. H. Lane, William C. Gage, Charles L. E. Hicks, Edmund S. Duggan, Arthur E. Oxley, and William H. Smith.

To be Second Lieutenants (on probation): Edwin A. McKay, Frederick C. Blette, and Everett M. Smith; Feb. 20th, 1916. Leonard R. Wright; March 13th, 1916. Thomas Wallace Costello and John Seabrook; March 19th, 1916. John C. Forsyth; March 20th, 1916.

The following appeared in the *London Gazette* of the 28th ult. :—

*Memoranda.*—H. E. A. Lindsay, late Lieutenant, Gordon High., to be Temporary Captain for duty with R.F.C.; March 18 h. Flight-Serjt. S. E. Devonald, R.F.C., to be Temporary Second

Lieutenant for duty with Military Wing of that Corps; March 11th. Pte. W. G. Barlow, London (T.F.), to be Temporary Second Lieutenant for duty with R.F.C.; March 15th. R. G. Westmacott to be Temporary Second Lieutenant (on probation); March 16th.

*Supplementary to Regular Corps.*—Second Lieutenant (on probation) T. C. Webb-Bowen relinquishes commission; March 20 h. To be Second Lieutenants (on probation), March 15th: H. D'O. Benningfield, J. Bell, S. W. Carline, F. S. Andrews, R. G. Heyn, W. L. Grech, H. C. Eltringham, C. J. D. Symons, C. J. Q. Brand, R. T. Colley, F. J. Miller, H. Hamer, D. D. Fowler, B. H. M. Jones, E. C. Callaghan and A. B. Fanstone; March 18 h. J. W. Francis; March 19th.

THE following appeared in a supplement to the *London Gazette* issued on the 29th ult. :—

*Squadron-Commander.*—Temporary Capt. F. H. Cleaver, General List, from Flight-Commander, and to be Temporary Major whilst so employed; March 16th.

*Flying Officers.*—Second Lieut. C. L. H. Hicks, S.R.; March 12th. March 14th: Temporary Capt. H. L. Edgar, Cheshire (T.F.); Temporary Lieut. T. A. Tillard, Norfolk Yeo.; Temporary Lieut. A. H. T. L. Speer, R.F.A. (T.F.); Second Lieut. E. D. Le Sauvage, Dorsets, and seconded; Second Lieut. R. C. Gallop, Scot. R., and seconded; Temp. Second Lieut. H. L. Chadwick, R. Warwicks and transferred to General List. Temporary Second Lieut. F. H. Coleman, Middx., and transferred to General List. Second Lieuts., S.R.: W. C. Gage, C. E. Rogers, A. K. Tylee, J. S. Shaw, V. C. Gordon, R. H. Lane, E. S. Duggan. Temporary Second Lieut. S. T. Welch, General List, from Flying Officer (Observer). March 15 h: Temporary Second Lieut. A. L. Gordon-Kidd, General List; Temporary Second Lieut. G. H. Nicholson, R.W. Surrey, and transferred to General List.

*Memoranda.*—To be Temporary Second Lieutenants for duty with R.F.C. March 15th: Serjt. C. J. Truran, H.A.C.; Lance-Corpl. J. Thompson, H.A.C.; Privates: R. H. Stocken, City of Lond. Yeo.; N. W. Webb, H.A.C.; S. Nixon, Can. L.I.; C. A. Samter, Lond. R.E. (T.F.); P. W. Chambers, 4th Can. Inf. March 18th: Serjts.: H. C. Todd, H.A.C.; O. E. Simmonds, Taunton Sch. O.T.C. Privates: E. J. Garland, Inns of Court O.T.C.; J. A. Ruck, F. L. Osman, Univ. Lon. O.T.C.; H. F. Mackain, Lond. (T.F.); J. H. Gale, Ox. Univ. O.T.C.; P. R. Pinsent, Winchester Coll. O.T.C.; R. W. Gunner, H. B. Wakefield, Inns of Court O.T.C.

*Supplementary to Regular Corps.*—Second Lieutenants (on probation) relinquishing commissions: K. E. Page; March 16th. E. T. Williams; March 20th. Second Lieutenants (on probation) confirmed in rank: J. H. Firstbrook, A. K. Tylee, V. C. Gordon, C. E. Rogers. S. R. Proctor to be Second Lieutenant (on probation); Feb. 28th.

THE following appeared in a supplement to the *London Gazette* issued on the 30th ult. :—

*Flight-Commanders.*—Lieut. J. W. Woodhouse, S.R., from Flying Officer, and to be Temporary Captain whilst so employed; March 15th. Temporary Capt. V. A. Beaufort, Devons., from Balloon Officer; March 16th.

*Wing-Adjutant.*—Capt. H. M. Meyler, Border, and seconded, vice Capt. V. H. Secker, 14th Hussars. March 4th.  
*Flying Officer (Observer).*—Capt. A. A. Walser, London (T.F.). Oct. 21st.

*Supplementary to Regular Corps.*—To be Second Lieutenants (on probation). March 6th: T. W. Tattersall, A. Ward. March 18th: R. F. Talbot, E. J. Smyth, C. E. S. Russell, J. R. G. Whitehead, D. J. Taylor, G. C. Bailey, A. E. Glew, C. N. Russell, F. E. Sargood, H. Hulbert, A. G. Stewart, O. G. Thomas, M. W. Wilson, A. H. Vinson, C. M. Crow, C. J. R. Milton, R. E. Dangerfield, L. G. Fraser, L. V. Hirst.

To be Second Lieutenants for service in the Field: W. Riding Regt.: Acting Sergt.-Major A. Hunter, R.F.C.; March 5th. Ox. and Bucks L.I.: Sergt.-Major E. McEvoy, R.F.C.; Feb. 27th. R. Irish Regt.: 1st Class Air-Mechanic W. Wood, R.F.C.; March 12th.

*Memoranda.*—N.C.O.'s and man to be Temporary Second Lieutenants for duty with R.F.C.: Corpl. H. F. Alton, R.E.; Feb. 27th:



## HONOURS.

### Rewards Won by the R.F.C.

It was announced in the *London Gazette* of the 28th ult. that the King had been graciously pleased to confer the undermentioned reward for gallantry and distinguished service in the field, in connection with the engagement at Sollum, Egypt—March 14th to 17th, 1916:—

#### Awarded the Military Cross.

Lieutenant CUTHBERT ROGER ROWDEN, Worcestershire Regt. and R.F.C.

A supplement to the *London Gazette* issued on March 30th contained the following:—

His Majesty the King has been graciously pleased to approve of the appointment of the undermentioned Officer to be Companion of the Distinguished Service Order, in recognition of his gallantry and devotion to duty in the field:—

Second Lieutenant (Temporary Lieutenant) M. HENDERSON, 4th Batt. Seaforth Highs. (T.F.) and R.F.C.

On photographic reconnaissance his machine was struck by a shell from an enemy anti-aircraft gun. The shell passed through the nacelle of the machine, and took off his left leg just below the knee. In spite of this he succeeded in coming down from 7,000 ft., and landing 3,000 yards behind our line, thus saving his aeroplane and the life of the observer.

His Majesty the King has been graciously pleased to confer the Military Cross on the undermentioned Officers and Warrant Officers in recognition of their gallantry and devotion to duty in the field:—

Captain J. E. TENNANT, Scots Guards and R.F.C.

During the night he bombed the sheds of an enemy aerodrome, descending to 30 feet to do so. He shut off his engine in order to avoid giving warning, although there was risk of not being able to start it again. His machine was much damaged by the explosion of his own bombs at so low a height. On his return he requested permission to take another machine and repeat the operation.

Lieutenant (Temporary Captain) ERNEST L. GOSSAGE, R.F.A. and R.F.C.

For consistent good and zealous work under bad weather conditions, both on patrol and when co-operating with the artillery in operations resulting in the capture of the enemy's position.

Lieutenant (Temporary-Major) R. P. MILLS, R. Fusiliers (City of London Regiment) and R.F.C.

For co-operating with the artillery in operations resulting in the capture of the enemy's position.

Second Lieutenant C. D. DANBY, R.E. (T.F.) and R.F.C.

For excellent work under bad weather conditions, when taking photographs both before and during operations.



### Promotion for Sir David Henderson.

In the *London Gazette* of the 4th inst. it was announced:—  
 "Major-General Sir David Henderson, K.C.B., D.S.O., to be Temporary Lieutenant-General. Dated March 24th, 1916."

Flight-Sergt. T. C. Noble, R.F.C.; March 5th. March 12th: Sergt. T. P. H. Bayetto, R.F.C.; Private H. M. Parsons, H.A.C.

The following appeared in a supplement to the *London Gazette* of the 1st inst.:—

*Flight-Commander.*—Capt. John U. Kelly, Duke of Edinburgh's (Wilts R.), from a Flying Officer; March 18th, 1916.

*Equipment Officer.*—Temporary Capt. C. E. Gardner, Gloucester Regt., from an Assistant Equipment Officer; March 17th, 1916.

*Flying Officer.*—Capt. T. R. Dowdeswell, Welsh Regt. (T.F.); March 18th, 1916.

*Assistant Equipment Officer.*—Second Lieut. H. Wing, Special Reserve; March 21st, 1916.

*Supplementary to Regular Corps.*—Second Lieutenants (on probation) confirmed in their rank: John MacD. Patten, Henry Wing and John S. Shaw.

To be Second Lieutenants (on probation): Hector Thompson; Feb. 20th, 1916. George A. Curtis; March 6th, 1916. Gerald Smith; March 18th, 1916.

Temporary Second Lieutenant T. S. HOWE, 6th Batt. Connaught Rangers and R.F.C.

When on patrol Sec. Lieut. Howe and Sec. Lieut. Leggatt attacked a hostile machine and drove it down. They then climbed again and attacked another. Under heavy fire from this machine, by a combination of good flying and shooting, they hit the enemy pilot and damaged his engine, forcing him to descend within our lines. The enemy were made prisoners.

Second Lieutenant F. N. HUDSON, the Buffs (East Kent Regt.) and R.F.C.

For conspicuous gallantry and skill on several occasions, notably when, although severely wounded in the head, he successfully completed his aerial reconnaissance. After recrossing the line and landing at an aerodrome, he at once lost consciousness. This young officer is only eighteen years of age, but has many times driven off enemy machines and twice forced them to the ground.

Second Lieutenant E. W. LEGGATT, the Duke of Edinburgh's (Wilts Regt.) and R.F.C.

For conspicuous gallantry and skill when on patrol. Second Lieutenants Leggatt and Howe attacked a hostile machine and drove it down. They then climbed again and attacked another. Under heavy fire from this machine, by a combination of good firing and shooting, they hit the enemy pilot and damaged his engine, forcing him to descend within our lines. The enemy were made prisoners.

Second Lieutenant H. I. F. YATES, No. 14 Sqdn., 5th Wing, R.F.C. (Special Reserve).

He was instructed to destroy an enemy waterworks, but, on arrival, found the place defended by anti-aircraft guns and infantry lying on their backs, who opened a heavy fire. Notwithstanding this he pluckily descended to 600 ft., and dropped a bomb into the centre of the waterworks. He thus succeeded in destroying them, and then attacked a machine-gun detachment and drove it from its position by fire from his own machine-gun. On a previous occasion his name was brought to notice for gallant and skilful work on a reconnaissance.

His Majesty the King has been graciously pleased to approve of the award of the Distinguished Conduct Medal to the undermentioned Warrant Officers, Non-commissioned Officers, and Men for acts of gallantry and devotion to duty in the field:—

2550 2nd Class Air-Mechanic A. DALZIEL, R.F.C.

For conspicuous gallantry on all occasions. When his dug-out was blown in he moved his wireless station to a fresh position in the open. Another time when his "aerial" was cut by a shell he repaired it under fire.

4534 Corporal (Acting Sergeant) W. W. GREGG, R.F.C.

10464 1st Class Air-Mechanic (Acting Corporal) H. P. LOWE, R.F.C.

When an aeroplane, which had caught fire with its bombs, was on the ground blazing, Acting Sergeant Gregg and Acting Corporal Lowe, regardless of danger, rushed out and cut out the officer pilot, who was unconscious. Immediately afterwards the bombs exploded.

"Brevet Colonel (Temporary Brigadier-General) Hugh M. Trenchard, C.B., D.S.O., the Royal Scots Fusiliers, Aide-de-Camp to the King, to be Temporary Major-General. Dated March 24th, 1916."

# A "POPULAR" TYPE AEROPLANE DESIGN.

By C. M. POULSEN.  
(Concluded from page 240.)

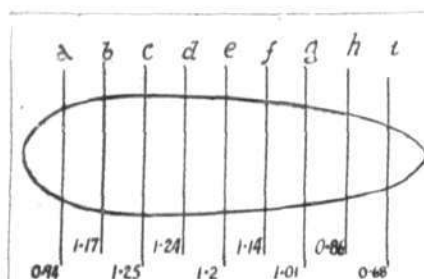
WITH regard to the controls, these should be kept as simple and straightforward as possible. The accompanying sketch shows one arrangement which should prove suitable. A longitudinal rocking shaft in the form of a steel tube rests in bearings formed by steel clips in the manner shown. The control lever itself, which can

on top of the rear spar of the lower plane at a point below the *aileron* crank lever.

The tube running to the transverse shaft is anchored to a crank lever in the centre of this shaft as shown, and some distance out along the shaft on each side is another double crank lever from which wires are taken to the

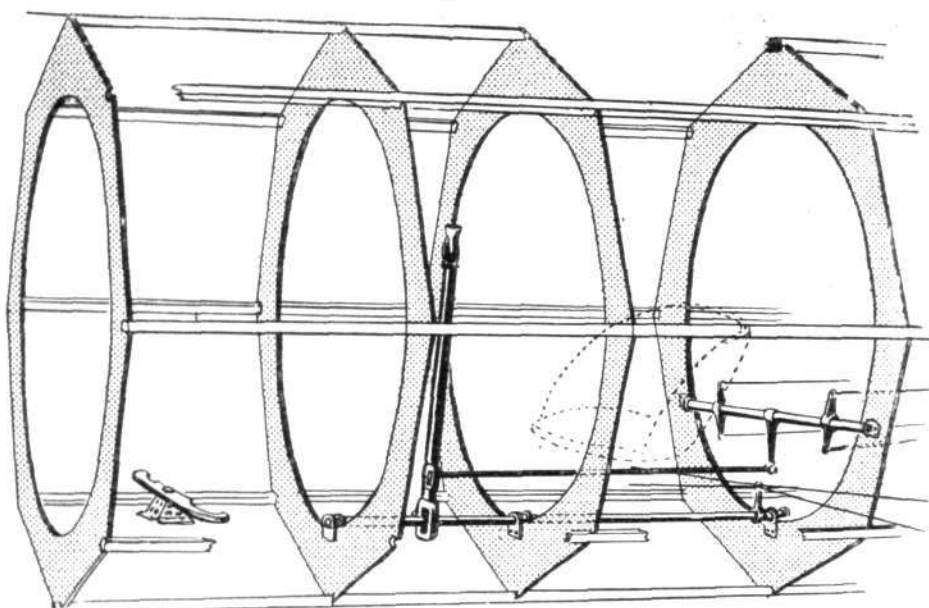
"Flight" Copyright.

Diagrammatic perspective view of the controls.—The floorboards of the pilot's cockpit have been omitted in order to show more clearly the mounting of the controls.



"Flight" Copyright.

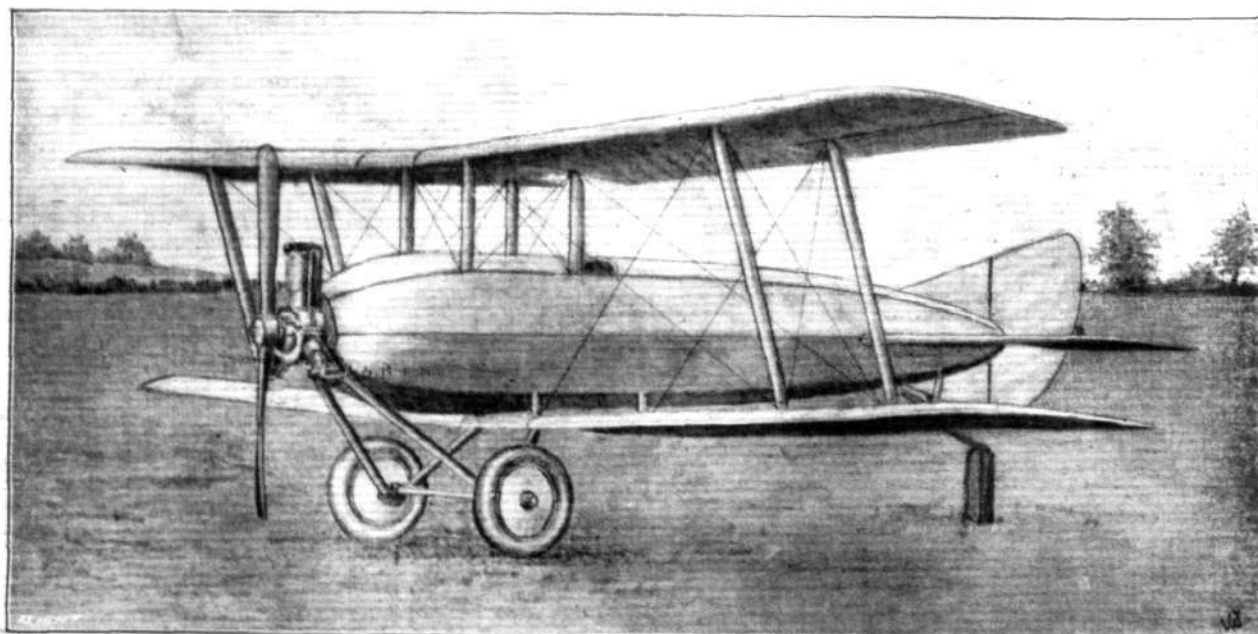
Section of a strut, with dimension figures.



either be a tube or a wood stick, is provided with two slots, one at the bottom for the rocking shaft and another a few inches higher up into which is passed the end of another tube running to a transverse tubular shaft mounted on the former immediately behind the pilot. A transverse bolt passing through the control lever and rocking shaft allows of moving the lever forward and backward, while a side to side movement of the lever will rotate the rocking shaft. At the rear end of the latter is a short crank lever, whence cables run to pulleys mounted

elevator crank levers. This type of controls will be easy to make and could be rigged up by any amateur, and while not possessing such refinements as ball bearings, &c., will be found to work quite well. The suggested arrangement for operating the elevators has the advantage of avoiding crossing of the elevator cables.

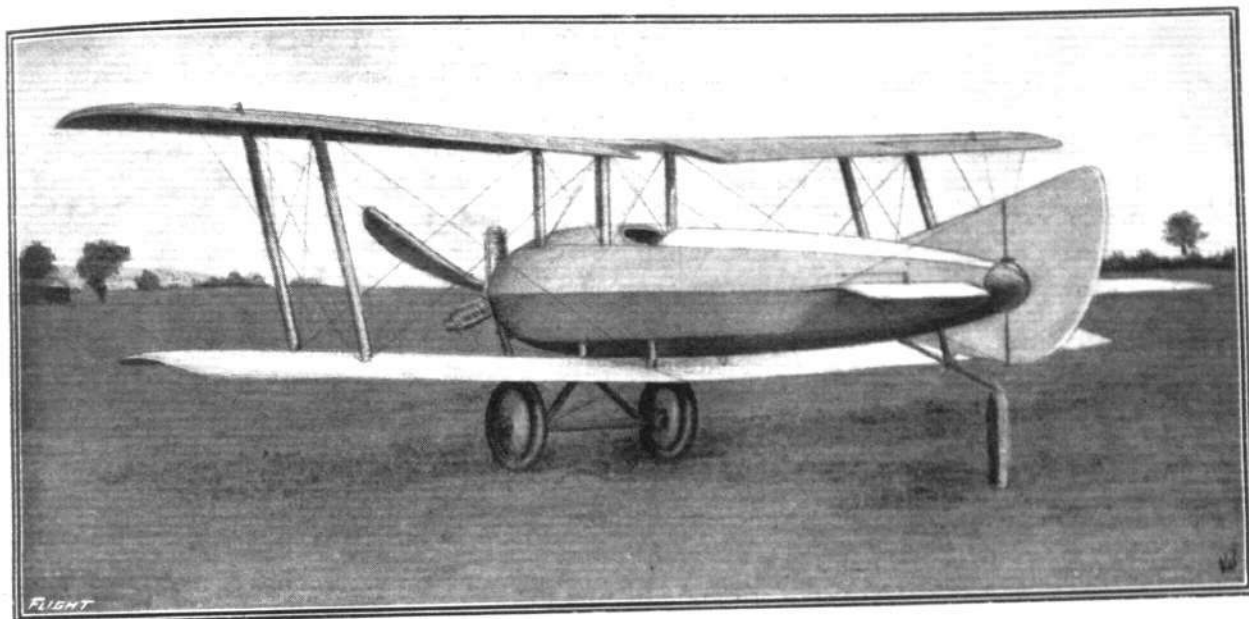
A foot bar mounted on a bracket, as shown, will complete the controls. In the sketch the foot boards, or floor, of the pilot's cockpit have been omitted in order to show more clearly the arrangement of the controls.



Three-quarter view, from in front, of the "Popular" biplane.

"Flight" Copyright.





Three-quarter view from the back, of the "Popular" biplane.

The floor is fitted up quite easily by having ordinary thin floor boards running longitudinally and resting at their ends on transverse supports screwed to the three-ply formers. Openings would, of course, be cut where necessary to clear the various parts of the controls. Finally, the question of petrol and oil tanks has to be dealt with.

As it is a rather difficult job for an amateur to make a tank that will remain petrol tight, I suggest that it would be advisable to have the tanks made by a firm doing this kind of work, and who would carry out the construction of them in their own way if given the capacity and the space available for mounting the tanks. In our case the shape of the tanks would be determined by the shape of the fuselage between formers Nos. II and III.

Sufficient room must be allowed for the pilot's feet, but the tank can, if necessary, occupy the top half of this compartment. The last of our sketches shows the strut sections, which, for the sake of cheapness, have been kept the same for all the struts of the machine. The section is not absolutely to scale, but the dimensions,

which are for a strut  $1\frac{1}{4}$  ins. by  $4\frac{1}{4}$  ins., are shown on the diagram against the lines which divide the section into ten equal parts.

In conclusion, I should like to thank "FLIGHT" readers for following these articles so patiently and, as I have good cause to know, closely. I am afraid that many have found them tedious on account of the inclusion of numerous alterations, but it seemed to me that an article of this description would be more instructive if it gave all the intermediate stages of the design rather than the finished work arrived at after many alterations and, let us hope, improvements. If this article should prove to have been of some little help to readers in initiating them into the ways and means of aeroplane design, in however elementary a way, I shall feel that its publication has been in some measure justified. If any of the readers who have expressed an intention of building a machine of this type will communicate their difficulties, I shall be pleased to render them any assistance I can, and such is the rapid progress of aeroplane design that already I see various ways in which, without altering it fundamentally, the present design could be improved.

### The Roll of Honour.

THE following casualties are announced by the War Office:—

Undated:

#### Wounded.

Lieutenant C. D. Fuller, Royal Flying Corps.

#### Missing.

Second Lieutenant O. Lerwill, Royal Flying Corps.  
3098 1st Air-Mechanic J. W. Newton, Royal Flying Corps.

**Previously Officially reported Missing, now Unofficially reported Wounded and a Prisoner of War.**

Second Lieutenant C. W. Palmer, Royal Flying Corps.

**Previously reported Missing, now reported Prisoner.**  
Second Lieutenant L. A. Newbold, Essex Regt. and R.F.C.

#### Killed.

2182 1st Air-Mechanic T. F. Parkes, Royal Flying Corps.

#### Died.

13638 2nd Air-Mechanic A. E. J. Palmer, Royal Flying Corps.

**Previously Officially reported Missing, now Unofficially reported Prisoner of War.**

876 2nd Air-Mechanic J. Chilton, Royal Flying Corps.

Reported in official list received from German Government:—

#### Now reported Prisoner of War.

2259 1st Air-Mechanic W. Holden, Royal Flying Corps.

### PERSONALS.

#### Casualties.

Second Lieutenant GEOFFREY WYNNE BAVIN, Lincolnshire Regt., attached R.F.C., who was killed on April 1st as the result of a flying accident on Salisbury Plain, was the third son of Captain and Grace Bavin, of Berkhamsted School.

#### Items.

Second Lieutenant R. W. HEATH, R.F.C., who has represented Australasia in the Davis Lawn Tennis Cup, has broken his collar-bone while flying, and is now recovering in London.

#### Married and to be Married.

The engagement is announced of FRANCIS SILVERTOP, Queen's Own Oxfordshire Hussars, attached R.F.C., eldest son of the late Henry Thomas Silvertop, of Minster Acres, Northumberland, and NEVILL, younger daughter of G. L. FOSTER HARTER, of Salperton Park, Gloucestershire.

# **"X" AIRCRAFT RAIDS.**

IN view of the decision of the Government not to allow details of places visited by enemy aircraft to be published, we are, as before, giving to each one an index number. Eventually, when details are available, we shall give the respective information under these index numbers, which will facilitate easy reference to each particular raid.

The following announcements have been officially issued, the date after the index number indicating when the raid occurred :—

## **"X 25" Raid. March 31st-April 1st.**

*"War Office, April 1st, 1.25 a.m."*

"An air raid took place last night over the Eastern Counties, in which five Zeppelins are believed to have taken part. All the raiders crossed the coast at different places and times, and steered different courses. At present about ninety bombs are reported to have been dropped in various localities in the Eastern Counties, but the results are not known. It is further reported that hostile aircraft have visited the North-East Coast, but no details have yet been received."

*"Admiralty, April 1st."*

"During the night a damaged Zeppelin was observed to come down off the Thames estuary. On being approached by our patrol vessels she surrendered. The crew were taken off and she was taken in tow, but she subsequently broke up and sank."

*"War Office, April 1st."*

"It has now been ascertained that the Zeppelins which carried out the air raid last night were organised in two squadrons and one detached ship."

"The two squadrons made the Eastern Counties their objective, while the detached ship raided the North-East coast."

"As far as is known at present, fifty-four explosive and incendiary bombs were dropped in the Eastern Counties and twenty-two on the North-East coast."

"The Zeppelin reported by the Admiralty to have fallen into the sea was the 'L 15.' She was hit by gun fire while over the Eastern Counties, the shell striking the upper part of the ship near the tail. After being hit she quickly dropped to a lower altitude, well down by the tail, and finally came down into the sea off the coast of Kent. A machine gun, some ammunition, a petrol tank riddled with shrapnel, and some machinery were dropped either by this vessel or by another of the raiders."

"Owing to the damage to telephone and telegraph wires caused by the recent storms it has not yet been possible to ascertain fully the casualties or the damage caused. The casualties at present reported amount to twenty-eight killed and forty-four injured."

*"War Office, Sunday, 7.40 p.m."*

"The total casualties reported as a result of the Zeppelin raid on the night of March 31st-April 1st now amount to: Killed, 43; injured, 66. Nearly 200 explosive and incendiary bombs were dropped. A Baptist chapel, three dwelling houses, and two cottages, were demolished, and a town hall, four dwelling-houses, 35 cottages and a tramway-car shed partially wrecked, but no military damage was caused."

"A number of our aeroplanes went up to attack the raiders. Lieutenant Brandon, R.F.C., on rising to 6,000 ft. at 9.45 p.m., saw a Zeppelin about 3,000 ft. above him. At 9,000 ft. he got over it and attacked, dropping several bombs, three of which he believes took effect. At 10 p.m. he got over the airship again, and let off two more bombs over her nose. His own machine was hit many times by machine-gun bullets. This may have been the Zeppelin which dropped the machine gun, ammunition, petrol tank, and machinery, or possibly that which came down off the Thames estuary."

## **German Version.**

*"Berlin, Sunday."*

"During the night of March 31st-April 1st one of our airship squadrons attacked London and the south coast of England. Bombs were freely dropped on the City between Tower Bridge and London Docks, the military camps in the north-western district of the City, the manufactories near Enfield, and the munition works at Wath Abbey."

"Another airship, after having successfully attacked a battery near Stowmarket, dropped a number of explosive and incendiary bombs on Lowestoft. A further battery was silenced near Cambridge. The extensive manufacturing works of the town were attacked, and bombs were finally dropped on the fortification works and harbours on the Humber, whereby three batteries were reduced to silence. All the attacks were successful, and reliable observations from the airships discerned the presence of numerous fires and the collapse of buildings."

"In spite of violent bombardment all the airships returned with the exception of 'L 15,' which, according to a report, was compelled to descend in the water of the River Thames. Searches

instituted by our naval forces have up to the present not been productive of any result."

*It is officially stated that this account is absolutely false in every particular except that relating to the destruction of 'L 15.'*

## **"X 26" Raid. April 1st.**

*"War Office, Sunday, 6.30 p.m."*

"Two airships approached the north-east coast last night. Only one crossed the coast, the other having turned back. As far as is at present known 16 persons were killed and about 100 injured. Eight dwelling houses were demolished, and a serious fire was caused in a French polishing shop."

## **German Version.**

*"Berlin, April 2nd."*

"During the night of April 1-2 a fresh attack was made on the English East Coast. Blast furnaces, great iron foundries, and industrial works on the south bank of the river Tees and harbour buildings near Middlesbrough and Sunderland were bombarded for an hour and a half with explosive and incendiary bombs."

"Violent explosions, the collapse of buildings, and the outbreak of fires clearly indicated the good effect of our attacks. In spite of a vigorous anti-aircraft bombardment, we suffered neither loss nor damage.—CHIEF OF THE ADMIRALTY STAFF."

## **"X 27" Raid. April 2nd.**

*"War Office, April 3rd, 1.15 a.m."*

"A Zeppelin raid took place last night, when the coast of Scotland and the northern and south-eastern counties of England were attacked. Bombs were dropped at various places, but no details are at present available. A further communication will be issued later."

*"War Office, April 3rd, 4.55 p.m."*

"It appears that altogether six Zeppelins took part in the raid on last night."

"Three of them raided the south-east counties of Scotland, one the north-east coast of England, and the remaining two the eastern counties of England."

"The vessels which raided Scotland crossed the coast at 9 p.m., 9.45 p.m., and 10.15 p.m., respectively, and cruised over the south-eastern counties of Scotland until about 1.10 a.m. Their course gave no indication of any special locality of attack, but in all 36 explosive and 17 incendiary bombs were dropped at various places, damaging some hotels and dwelling houses."

"The following are the casualties which have been reported up to the present in Scotland :

	Men.	Women.	Children.	Total.
Killed ...	7	—	3	10
Injured ...	5	2	4	11

"One vessel visited the north-east coast and dropped 22 explosive and 15 incendiary bombs."

"The two remaining ships crossed the English coast at about 10.15 p.m., and cruised over the eastern counties until about 1 a.m. They were both engaged at various times by anti-aircraft artillery, and appear to have been prevented by this means from selecting any definite locality as their objective. Thirty-three explosive and 65 incendiary bombs were dropped by these two vessels. As far as can be ascertained, no casualties were caused in England."

## **German Version.**

*"Berlin, April 3rd."*

"Army and naval airships attacked during the night the docks of London and other important military points on the English coast, as well as Dunkirk.—CHIEF OF ARMY ADMINISTRATION."

*"Berlin, April 4th."*

"For the third time, on the night of April 2nd-3rd, a naval air squadron attacked the English East Coast, this time the northern part. Edinburgh and Leith, with the docks on the Firth of Forth, Newcastle, and important wharves and buildings, blast furnaces, and factories on the Tyne were bombarded with numerous explosives and incendiary bombs with very good results. Heavy explosions with extensive collapses were observed. A battery near Newcastle was silenced. In spite of heavy bombardment all the airships safely returned and landed."

*It is officially stated that the above is of the usual inaccurate and bombastic type with which Germany hopes to delude neutrals and her own public.*

## **"X 28" Raid. April 4th.**

*"War Office, April 4th."*

"A Zeppelin is reported to have crossed the East Anglian Coast between two and three o'clock this morning. The airship does not seem to have been long over land, and although several explosions have been reported no fragments of bombs have been discovered up to date. No damage was caused, and no casualties can be traced."



## Other Raid Items.

## Friday.

Three petrol tanks and other things thrown over by a damaged Zeppelin in an Eastern counties area were on private exhibition in the War Office quadrangle on Monday afternoon, and were subsequently removed to the War Office buildings.

The first of eight bombs fell on one E. counties town just as the clocks were striking eleven.

The district which suffered most was the working class area, where two dwelling houses were demolished and all the glass in the front of a row of dwelling houses was knocked out.

One airship crossed the coast at a lonely spot at 8 p.m., and two more crossed at a similar spot farther down the coast ten minutes later.

Fifteen bombs, apparently dropped on some cars on a main road, fell in fields on either side, the nearest being seventy yards away.

On an East Anglian river the approach of Zeppelins was signalled by the loud crying of the waterfowl, while in wooded districts the pheasants kept up a commotion all night.

At one place where nine bombs were dropped the majority fell in the water; one went through an empty oil tank.

From one N.E. coast town where considerable damage was done it is reported that the Zeppelin, having come along the coast, was about to turn seaward when a gun was fired at it. It immediately stopped and dropped bombs, two of which fell on a church. There is nothing of the slightest military value in the town.

The machine-gun which was jettisoned is said to weigh about 80 lbs. It is believed that this and the petrol tanks were not dropped from the "L. 15," so it is probable that at least another vessel was severely damaged. Possibly it was the one bombed by Lieutenant Brandon.

According to one report from a N.E. town where two airships were seen, one was a very large one and the other comparatively small.

The armed trawler "Olivine" took off two officers and fifteen men from the "L. 15." Apparently one man was drowned.

According to Capt. Pells, a South Shields pilot, the "L. 15" was about 30 ft. out of the water aft and about 20 ft. forward when he was near the Kentish Knock Lightship at 6.15 a.m. He noticed a big hole or rent in the envelope near the stern.

The commander of the "L. 15," Lieut. Commander Breithaupt, said to be a cousin of von Hindenburg, wore the Iron Cross, dated October 13th, 1915, and Order Pour le Merite awarded for previous Zeppelin raids.

He was very anxious to make it clear to a *New York Herald* correspondent that the Zeppelins did not seek to injure women and

children, but to serve high military purposes. He accepted full responsibility for the actions of his crew.

Both he and his assistant, Ober-Lieut. Kuhne, speak English fluently.

They declared they at all times knew the position of their ship, but they declined to say whether they could identify particular buildings.

Most of the crew had been sailors on the Hamburg-America and North German Lloyd lines. They declared that owing to the clouds they were unable to see anything beneath them; they could only distinguish land from water. They justified their participation in the raid by pleading that they were ordered to go, and disobedience meant death for them.

One airship, probably the "L. 15," on being hit released her water ballast, and as she glided up at an acute angle, dropped 40 bombs, which fell harmlessly in a line, a mile long. Seeing her fate, a companion ship immediately turned tail.

## Saturday.

The Zeppelin dropped 21 bombs, 14 explosive and 7 incendiary. It appears to have dropped them in couples at the various villages passed over.

One bomb struck a tramway car, killing an inspector, and severely injuring the conductress. A leader of the local Labour Party, on duty as a special constable, was also killed.

Another bomb fell through a roof and rested unexploded on a bed. Five persons in one house which was wrecked entirely escaped injury.

## Sunday.

In an ancient town in S.E. England 15 bombs were dropped in about eight minutes in a quiet lane, the only casualties being three hens and a number of windows.

100 bombs were dropped in a half mile area, in which there are only two houses.

Round one farmhouse in an Eastern County area there is a ring of 24 bomb craters, yet no one was hurt.

At a south-eastern village the gunners are certain that they hit one of the raiders at the stern and bow; the vessel was seen to suddenly tilt and climbed upwards.

After bombing a Scotch town, one Zeppelin fired its machine gun.

The most serious damage was done in the densely populated poorer districts.

One bomb falling on a doctor's house went through four floors, and finally landed in the pantry.

An airship is believed to have circled three times over one town.

## THE FLYING SERVICES FUND—ADMINISTERED BY THE ROYAL AERO CLUB.

## Subscriptions.

	£	s.	d.
Total subscriptions received to Mar. 29th, 1916	10,591	19	6
Staff and Workers of Gwynnes, Ltd. (Twelfth contribution) ... ..	9	1	5
Collected at the Westland Aircraft Works, Yeovil (Twenty-seventh contribution) ...	0	9	0
Total, April 4th, 1916	10,601	9	11

B. STEVENSON, Assistant Secretary.

166, Piccadilly, W.

THE Flying Services Fund has been instituted by the Royal Aero Club for the benefit of officers and men of the Royal Naval Air Service and the Royal Flying Corps who are incapacitated on active service, and for the widows and dependants of those who are killed.

The Fund is intended for the benefit of all ranks, but especially for petty officers, non-commissioned officers, and men.

Forms of application for assistance can be obtained from the Royal Aero Club, 166, Piccadilly, London, W.

## The Raid on the Zeppelin Sheds.

A *communiqué* issued by the Admiralty on March 28th relative to the combined sea and air raid on the Schleswig coast on March 25th, contained the following:—

"Our destroyers, while dealing with the enemy patrol vessels, were themselves attacked by enemy aircraft, but received no damage of any kind."

In an account obtained by a Central News correspondent from one who took part in it, the following occurs:—

"The moment was hardly opportune to carry out the seaplane raid, already deferred on account of the weather. The conditions, however, did not improve, and it was decided to let loose our flying men immediately. Five went up, young Lieut. Reid leading. I shall never forget the scene as they soared amongst the snow-clouds right over Schleswig-Holstein, the shrapnel from the German anti-aircraft guns bursting against a background of snow with our airmen playing all kinds of tricks to dodge the fire. The German aviators came over in advance to meet us, and our gunners quickly set to work on them. They exploded shell after shell about the aeroplanes, and two at least, badly hit, promptly retired."

## Italy's New Battleplanes.

TESTIMONY as to the efficiency of Italy's air fleet is forthcoming from the *Berlingske Tidende's* correspondent on the Austrian front, who states that the Italians are superior in this respect to Austria-Hungary, a fact which is also recognised by the Austrians. The large battleplanes of the engineer Caproni are specially marvellous and better than all the other types. He says that at the Isonzo front alone there are about eighty Caproni machines, and the Austrians have not succeeded hitherto in shooting down a single one of them.

## New French Records.

RECORD breaking continues in France, and, according to the *Journal, Poiree*, who has been doing some effective work with the Russian army, is now on leave in France, and in the course of some tests with a new machine has set up several records. He rose to a height of 13,000 ft. with three passengers. This is a French height record. Carrying four passengers the aviator attained a height of 4,000 metres (13,000 ft.), a world's record. By reaching a height of 3,000 metres (9,750 ft.), carrying five passengers, another world's record was made.

# QUESTIONS IN PARLIAMENT.

## Defence Against Hostile Aircraft.

IN the House of Commons, on Tuesday, Mr. Pemberton-Billing asked the Under-Secretary for War whether, in view of the public dissatisfaction with the existing methods of air defence, as revealed in the last three air-raids over a wide area, he is now prepared to give consideration to the proposals for effective defence submitted to the authorities in the early days of this war by the member for East Herts?

Mr. Tennant: I notice also that Mr. Joynson-Hicks asks whether we can state who was responsible for bringing down the Zeppelin "L. 15." It is not possible to be certain to whom the credit is due, as several hits are believed to have been made by different batteries.

The new arrangements for the defence of London and the munitions factories in and around London have been very successful. More than one attack has been driven off the Metropolis without the inhabitants being aware of it.

In a printed reply to a question in the House of Commons by Mr. Hogge last week, Dr. Macnamara says:—"A report by Sir Percy Scott on the gunnery defences of London against air attack has been received, but as it contains a record of the steps which have been taken, and are being taken, to improve the gunnery defences of London, it would clearly not be in the public interest to comply with my hon. friend's request to convey the report or any part of it to the House."

## Raid Warnings.

REPLYING to Mr. Joynson-Hicks in the House of Commons on March 30th, Mr. J. Pease said arrangements had been made by the Commander-in-Chief, Home Forces, the Home Office, and the Post Office, acting in concert, for the conveyance of warnings of the approach of hostile aircraft to the responsible military and police officers, and to munition factories and other establishments where special action had to be taken in such an event. He understood arrangements had in turn been made by the military and police to advise local authorities wherever it was thought expedient. Telephone exchanges were with few exceptions open always, and telegraph offices were kept open wherever necessary, but it was unnecessary to keep all post-offices open.

## The Kent Seaplane Raid.

DR. MACNAMARA, in answer to Mr. Brookes and Sir A. Markham in the House of Commons on March 28th, said: "So far as the Royal Naval Air Service is concerned, only one enemy seaplane was brought down on the occasion of the recent aerial attack on parts of the Kentish coast. I take this opportunity of referring to the gallant conduct of Flight-Commander Bone, who, in a single-seater land machine, pursued this enemy seaplane to a distance of thirty miles from land, where he drove his opponent to the water, killing the observer. He was then compelled, owing to shortage of petrol, to return to land. As to the ultimate fate of the enemy machine there is no definite information."

## Mr. Billing and the Air Committee.

IN the House of Commons on March 28th, Mr. Tennant, replying to Mr. Bennett-Goldney, said: "I understand that the hon. member for East Herts was asked to give evidence before the Committee presided over by Lord Derby. He replied that no useful purpose would be served until this House had satisfied him upon the powers and authority of the Committee. No invitation has been given to him to become a member of or adviser to the Committee."

## The Joint Air Committee.

ON March 29th Mr. Pemberton-Billing asked in the House of Commons if friction had already arisen between naval and military members of the Joint Air Committee. Mr. Tennant replied that he was informed that no conditions have arisen which would prevent a full and frank disclosure of the position of each service. He understood that no conditions involving friction had arisen.

## R.N.A.S. Pilots and the War Office.

MR. PEMBERTON-BILLING also asked whether the First Lord of the Admiralty could inform the House of the circumstances connected with an application from the War Office for the services of Royal Naval Air Service pilots for Royal Flying Corps machines, and could he state the objections put forward by Royal Naval Air Service pilots against volunteering for the work.

Mr. Macnamara stated the First Lord had no statement to make.

## Pupils and the Military Service Act.

MR. PEMBERTON-BILLING also asked Mr. Tennant whether Mr. Duncan, a pupil at a civilian flying school, who had already spent £160 in qualifying for his pilot's certificate, had been called up under the Compulsion Act in spite of assurances that he would be given sufficient time to obtain his certificate, and was he aware this was not an isolated case.

Mr. Tennant said the War Office had no information, but inquiries should be made. It seemed clear that the man had not attested, and therefore came under the Act, and the authorities were bound

to send a notice to him. If Mr. Pemberton-Billing said this was not an isolated case, would he give particulars of others?

Mr. Pemberton-Billing: Is it intended to call up men who are almost qualified pilots and put them in the trenches?

Mr. Tennant: There is no such intention.

## Steel for Aircraft.

A QUESTION by Mr. Bennett-Goldney in the House of Commons on March 28th drew the following from Mr. Tennant:—

"Only experimental engines are produced at the Royal Aircraft Factory, and there is no reason to believe that the quality of the steel used there is inferior to the steel used in the German engines. The composition of the German steel is known to us. The Royal Aircraft Factory does not make steel. The steel used in British aeronautical engines is obtained from British manufacturers."

"The War Office, in conjunction with the Admiralty, have taken active measures in the matter of investigation of production of steel for aircraft by obtaining a Treasury grant for technical research to be carried out by the Institute of Automobile Engineers and the Society of Motor Manufacturers and Traders, and by assisting in the institution of a committee of aircraft steel manufacturers in Sheffield and a committee of stampers in Birmingham."

## Dope Poisoning.

IN the House of Commons, on March 21st, Mr. Rowlands asked the Home Secretary whether his attention had been called to the death at Peterborough of James Steele, from dope poisoning; whether he was aware that Dr. Alexander Walker, who made the post-mortem examination, stated in his evidence that in his opinion the death of Steele was due to toxic poisoning, no doubt due to tetrachlorethane; and if he intends to take immediate steps to secure the use of non-poisonous dope for the highly-poisonous dope now in use. Mr. Brace replied:—"I have received reports on this case which confirm the view that death was due to tetrachlorethane poisoning. Inspection showed that the system of ventilation installed for drawing off the fumes was defective in some respects, and instructions have been given for improvements to be made. With regard to the latter part of the question, as I informed my hon. friend in answer to a similar inquiry a fortnight ago, the obstacle to the use of the non-poisonous dope is that one of the essential ingredients is not produced commercially in this country at present, and sufficient quantities of it are not available, but the departments concerned are making every effort to arrange for an increased supply. Meanwhile, new instructions embodying further administrative measures for guarding against the danger have been issued by the Home Office to all aircraft factories, and steps are being taken to extend the use by contractors of a dope made under War Office supervision which contains as little tetrachlorethane as possible."



## New Defence Regulations.

ADDITIONAL regulations under the Defence of the Realm Act, published in the *London Gazette*, prohibit the ringing and chiming of bells, clocks, &c., in areas where lights are obscured, except in special cases where special permission is obtained. There is also a regulation forbidding the use of any signal, visual or otherwise, which might be taken for an authorised signal.

## Blinds in Railway Carriages.

TWO men were each fined half-a-guinea at Grimsby for failing to draw the blind in a railway carriage at night. It was stated that the case was brought forward as a warning to the public that each occupant of a railway carriage is responsible for the drawing of the blinds.

## A Society of British Aircraft Constructors.

AN important move was taken last week in the foundation of a Society of British Aircraft Constructors, with the object the furtherance and protection of the interests of those engaged in the industry. The names of those constituting the Council, and who are responsible for this new move, include Sir Vincent Caillard of the Wolseley Co., Mr. R. O. Cary of the Sopwith Co., Sir Arthur T. Dawson of Beardmore's, Mr. H. White Smith of the Bristol Co., Mr. G. Holt Thomas of the Aircraft and Gnome Engine Co., Col. H. F. Wood of Vickers, and Mr. Howard T. Wright of J. Samuel White and Co. The Secretary is Mr. C. V. Allen, St. Stephen's House, Victoria Embankment.

## Higher Pay for the R.N.A.S.

AN Order in Council, published in the *London Gazette* of the 31st ult., states:—

"In consideration of the risks involved officers and men, whether belonging to the Royal Naval Air Service or not, who are employed on acceptance duties and are required to carry out trials on new and repaired machines, are to receive additional remuneration as follows:—"Commissioned officers, 5s. per day; warrant officers, 3s.; men, 2s."



## LAUNCHING SEAPLANES FROM BATTLESHIPS.

### THE U.S. NAVY METHOD.

SINCE the days when a Curtiss hydro-aeroplane first left the deck of a battleship the problem of starting from and alighting on a man-of-war has received great attention both in America and other countries. While under favourable conditions it has been possible for one of the old-type slow seaplanes to alight on the deck of a ship the difficulties of so doing are very great, and it has

as the idea of a catapult launching apparatus for naval aircraft. As a practical naval man, this officer realised that no fighting ship could afford to be encumbered with long launching platforms such as were tried first here and then experimented with abroad. He knew that space must be economised and the sweep of guns uninterrupted. Therefore he conceived a short-run catapulting railway that could be quickly erected and just as rapidly dismantled and stored away. His first apparatus was tested over three years ago at the Washington Navy Yard, and as an outcome of those promising experiments a new machine was designed and sent to the Aeronautic Station, Pensacola, Florida.

"There it was installed at the start upon a coal barge and thoroughly tried out. As a result of its success the apparatus was removed and placed permanently aboard the U.S.S. 'North Carolina.' It is from this ship that seaplanes have repeatedly been launched in the past few weeks in the open sea and with the armoured cruiser underway. Despite the fact that one of the older and heaviest of the service aeroplanes has been used in these trials, still the catapult has answered admirably and has taken care of the load imposed upon it again and again. This point is suggestive, because the weight factor may be taken to represent either a long-range scout or a lighter seaplane equipped with bomb-dropping apparatus.

"In principle, the launching device consists fundamentally of a car propelled along a narrow-gauge track. Upon this car rests the seaplane, and the aircraft is secured to the vehicle until the latter reaches the end of the runway. When the car stops the seaplane is automatically released, and the acquired inertia suffices to sustain the flying machine until its propellers are able to provide the

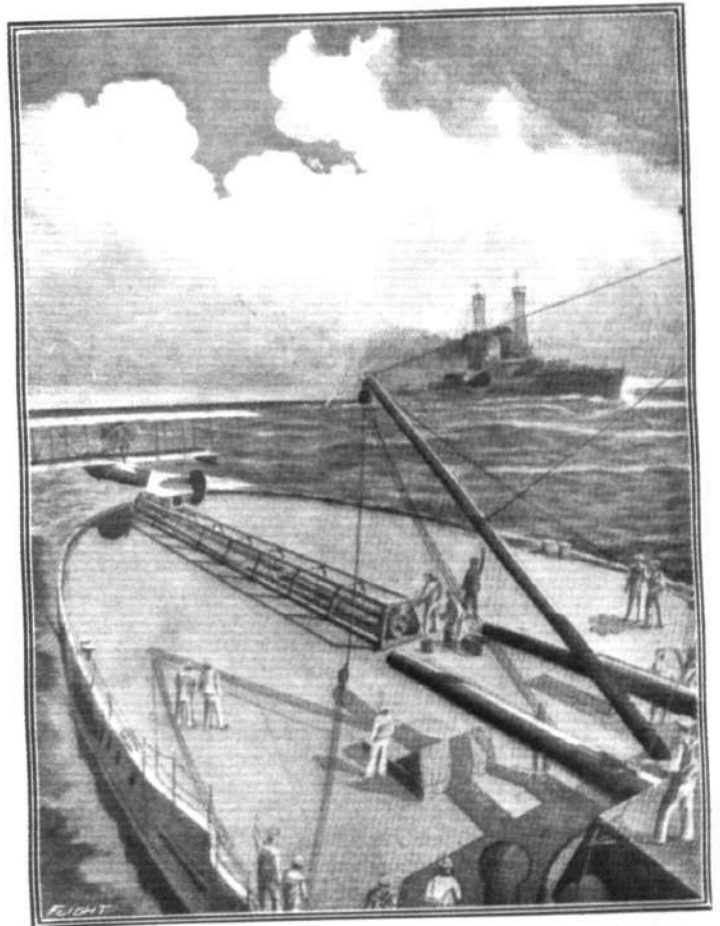


Launching a seaplane from the deck of the U.S. armoured cruiser "North Carolina."

become general practice to let seaplanes alight on the sea, to be hoisted on board afterwards. As regards starting from the deck of a ship, one of the difficulties is that of providing a sufficiently long platform to allow the seaplane to gather sufficient velocity to sustain it when it has left the launching platform. For the following description of how this is accomplished in the U.S. Navy we are indebted to our contemporary *Scientific American*:—

"The seaplane as a naval scout should be able to operate from a moving ship as a base, and to do this with much the same indifference to the state of the weather as its fellow in the military service, starting aloft from the ground. Otherwise its nautical usefulness would in no way be comparable with that so splendidly discharged by aircraft in the army. The stumbling block has been very largely the seaplane's inability to get a start from rough waters. The sturdiest of them are able to land upon something of a troubled sea, but their pontoons do not permit them to gain sufficient speed under those circumstances to insure the take-off for a flight. Therefore, even though they might be put overboard safely in the lee of a ship it has not been possible, except under the most favourable conditions of the water, to get them away in flight.

"But this difficulty has been surmounted here, thanks to the initial work of Captain Washington I. Chambers, U.S.N., who gave



A drawing showing the seaplane launching mechanism used on the U.S. armoured cruiser "North Carolina."

necessary propulsive effort. As a rule, however, the aircraft's motors will be speeded up to this point by the time the end of the track is reached. The method of operating is as follows: The 'plane is lifted on to the car and secured to it, then the motors are set going but not at full speed. This is accelerated after the catapulting begins. The aviator takes his seat in his craft, and



when everything is in readiness the car, with its load, is drawn along the track at an increasing rate. This gathering momentum is so nicely controlled that a velocity of about 50 miles an hour is attained by the time the aeroplane is cast loose from the car. The car is brought to a standstill a very few seconds later.

"Originally, the truck was sent overboard at the end of its run, but in service aboard a ship underway at sea this would be undesirable, because it would be necessary either to stop or slacken speed in order to haul the car aboard even if it were held by a line. Clearly it would be impracticable to abandon the truck and to hold in reserve any number of them. The motive power employed for moving and speeding up the catapult car is compressed air. By means of a throttle worked by a cam, the air impulse is progressively increased upon the operative piston or plunger which functions the wire rope purchase by which the truck is pulled during its comparatively short run of something less than 50 feet. The actual stroke of the piston is in the neighbourhood of one inch for each foot of advance on the part of the truck; the

turns of the wire rope over pulleys serving to produce this multiplication of movement. The air required by the catapult is supplied from the torpedo air service of the cruiser and at a pressure of something like 300 pounds per square inch.

"The runway is made up of light steel angle iron and raised only three feet or so above the ship's deck, to which the structure is secured by attachments that can be quickly released when it is desired to dismount the apparatus. The aviator is not jarred during the acceleration of the car and the final catapulting of the seaplane. The only sensation on the part of the pilot is like that due to a sudden blast of air in the face. The trials so far have been conducted with the 'North Carolina' steaming along at cruising speed.

"A scout cruiser is capable of covering a visual front of but 20 miles under favorable conditions of the atmosphere. An air scout 4,000 feet aloft can observe ships 70 miles away! There is no need of elaborating upon the strategic advantage obtained by the use of scouting seaplanes. It is just this widened field of observation which the aeroplane catapult makes possible."



## London Aerodrome, Collindale Avenue, Hendon.

**Grahame-White School (R.N.A.S.).**—Straights last week with instructor: Probationary Flight Sub-Lieuts. Griffin and McHardy. *Brevet* during week: Probationary Flight Sub-Lieuts. Donald and Melhado.

**Grahame-White Civilian School.**—Straights with instructor: Messrs. Box, Sloden, Spencer, Parkinson, Forster, Scheidt and Smith. Eights with instructor: Messrs. Baragar, Eichelbrenner, Franck, Grasset, Hathaway, Holman, Sandys, Walk, Williams F., Williams S., Kryn, Leigh and Henshaw. Eights alone: Mr. Tanner.

*Brevets* during week: Messrs. Butler and Rigby.

Instructors during week: Messrs. Biard, Hale, Manton, Pashley, Russell and Winter.

**Beatty School.**—The following pupils were out during the week: Messrs. Fong, Jones, Cuthbert, Chang, Collier, Edwards, Drysdale, Branford, Lindsay, Sellars, Barrow, Mossop, Patterson, Podmore, Parsons, Hungwan, Martin, Knox, Smith, Phillips, Tjaarda, Ping, Tow, Earl, Skeet, Brewerton, Stanley, Yam, Sing and Ching.

The instructors were Messrs. G. W. Beatty, W. Roche-Kelly, G. Virgilio, R. W. Kenworthy, L. L. King, A. E. Mitchell and H. Fawcett; the machines in use being Beatty-Wright dual-control and single-seater propeller biplanes and Caudron dual-control and single-seater tractor biplanes.

Certificates were taken during the week by Messrs. G. A. Thompson, R. H. Edwards, F. W. J. Collier and J. M. Drysdale.

**Hall School.**—The following pupils were out during last week:—

With A. Chave: Messrs. Longton, Smith, Cosgrave, Neal, Chapman, Mahoney, Halliday, Rochford, and Roberts. With Cecil M. Hill: Messrs. Glegg, Osmond, Taylor, Le Grice, Gudger, Rayne, Hucklesby, Robinson, Duncan, Collier, Dickson and Pennell. With H. F. Stevens: Messrs. L. W. Ormerod and W. H. Longton.

Two excellent certificates were taken by Messrs. L. W. Ormerod and W. H. Longton.

N.B.—W. H. Longton took seven weeks only to qualify at the Hall school, this being the same period taken by Lieut. Brandon (the Zep. straffer) to learn to fly at the Hall School.

**London and Provincial Aviation Co.**—Pupils doing rolling last week: Messrs. Crawford, Svendsen, Jennings and Ferris. Doing straights: Messrs. Archer, Houba, Moore, de Goussencourt and Creaghan. Circuits and eights: Messrs. Vilain XIII, Verbessem and Starey.

Instructors: Messrs. W. T. Warren, M. G. Smiles, H. Sykes, G. V. Aimer and W. T. Warren, jun.

Mr. S. H. Starey took a good "ticket" this week, his landings being specially well judged.

**Ruffy-Baumann School.**—Pupils with instructor last week: Messrs. J. B. Thomas, jun., Capt. Bailey, Williams and Williams, Maya, Torres, Portela, Cuthbertson, Westlake, Winter, Edgar and Hoskyns. Doing straights or rolling alone: Messrs. Maya, Cox, Muspratt, Torres, Portela, Wood and Baron D'Opstael. Eights or circuits alone: Baron D'Opstael.

Instructors for the week: Messrs. Edouard Baumann, Felix Ruffy, Ami Baumann, Clarence Winchester and Andre Thomsen, and 50 and 60 h.p. Ruffy-Baumann tractor biplanes in use.

Another new machine is about to be put in commission at the school.

## Bournemouth School.

Last week pupils rolling: Messrs. J. Wilson, G. Mouton, Morris, Adamson, and Kennedy. Doing straights alone: Messrs. Smith, O. Wilson, Morley and W. Mouton. Half circuits alone: Messrs. Simpson, Dubois, Meeus, and Devos. Eights, &c.: Bonnevie.

Instructors: Messrs. F. King, and S. Summerfield, with 35, 45, and 60 h.p. Caudrons.

Everyone was more than pleased to receive a visit on Thursday from Mrs. C. de Beauvoir Stocks, who took great interest in the school work and in the many exhibition flights given by Messrs. F. King and S. Summerfield.



By R. P. HEARNE.

I WAS amused to find that our staid contemporary, the *Engineer*, had been playing with the old fallacy that a Zeppelin could melt the snow on its back. The Editor of "FLIGHT" threw cold water on the suggestion, but it is worth going into more fully, for the idea is widespread, both in this country and in Germany. The *Engineer* suggested that the heated exhaust gases, or the hot water from the engine circulation system, could be used to heat the envelope of the Zeppelin during a snowfall, and thus melt the snow which otherwise might weigh down the ship.

Let us now consider the problem. We are to heat the stout outer fabric covering the upper part of the ship for a length of nearly 500 ft. This fabric is a very bad conductor of heat, and thus to make any appreciable effect on the snow we should need a constant supply of very hot gases within the envelope of the ship. One has only to stand near the exhaust pipe of a motor car to note how rapidly the gases drop in temperature from the time they leave the engine. In the Zeppelin with a diameter of about 50 ft. it is obvious that the gases can have very little heat left by the time they reach the top of the envelope, some 60 ft. at least from the engine.

Indeed, we can dismiss the idea that the snow could be melted by such means through the fabric which covers the ship. Next we have the hot water idea. The framework is to be made hollow, and the hot water is to be pumped up through it to a height of 60 ft. or so, and then through the non-conducting fabric there must pass heat enough to melt the snow! To make the framework of a Zeppelin tubular, to establish water-tight connections for a length of 500 ft., and pump hot water through them so that the snow might be melted, would call for constructional methods and additional plant which no airship could carry. The whole scheme is absurd.

All this pother has arisen because some Zeppelins visited this country on a night when occasional and local snow squalls occurred. The sensational press, which not so long ago denied that Zeppelins could reach England at all, veered round to the panic line that even snowstorms could not stop the enemy airships. Then the explanations arose. One averred that the Zeppelins could melt the snow. Another held that snow clouds are low clouds, and that the Zeppelins simply sailed clear over them.

I have dealt with the snow-melting fallacy. As to snow clouds being invariably low, I might hint that the summit of Mount Everest, 29,000 ft. high, has got its snow cap somehow or other. Thus, the fact remains that snowstorms are bad for Zeppelins. During winter the risk of snow squalls must be run in war time, but the Germans seek to avoid that risk as much as possible. But even the German meteorological office makes mistakes at times. What happened most likely on the occasion of the "snowstorm raid" was that the Zeppelins setting out in clear weather ran into a series of local snow squalls over England, the ships coming from the north-east and the squalls from the north.

Instead of going far inland the Zeppelins seem to have headed south at once so as to get shelter in Belgium, and they jettisoned their bombs in a very hasty way. The high speed of the ships, and their fine reserve of power, enabled them to outrun the occasional squalls and carry a fair burden of snow.

Matters would be wholly different if they had to oppose a snow storm or blizzard. The force of impact would cake the snow upon the back of the ship, and soon a dense icy mass of great weight would be established. Navigation also would be almost impossible, as no landmarks could be observed. The pedestrian has had many opportunities lately of noting the difference between walking against a blizzard and walking with the wind behind him. Conditions for a Zeppelin would be much worse, and there is nothing for it but to run with the wind and try to outpace the snow clouds. Snow is bad for Zeppelins.

#### The Lights of Paris.

Lord Northcliffe has written a most fascinating article on the French treatment of air problems, and he cites the opinion of the aerial defenders of Paris as to the futility of reducing the lights. The French experts now declare that a great city like Paris or London cannot be hidden from Zeppelins no matter how the lights are dimmed. I have advanced that opinion since the commencement of the war, even at the time when Paris was plunged into darkness. Small and undefended towns may find some measure of safety in darkness, provided the Zeppelins do not use star shells or searchlights. But an expert navigator can easily make his way to London or Paris, however the lights are manipulated, and by means of the river and local conditions he can know his position with great exactitude. We may well believe that the Zeppelin pilots, in their German way, have been studying the landmarks of England for years before the war, and that they have at their disposal a mass of data which cannot be hidden by the reduction of the lights of London.

Paris now has put up its lights, and no doubt one of these years we may follow suit in London. We shall then have to boldly rely upon our gun and aeroplane defences until our new super-Zeppelin arrives on the scene. Of course one British Zep. against five or ten Germans is rather at a disadvantage, though there is a form of battle, which I must not describe, in which one defender ship may successfully cope with a number of raiders.

#### Long Range Scouting.

The first great advantage conferred by our super-Zeppelins will be that they can cruise far out to sea and scout over a very wide area. Thus the enemy raiders may be sighted long before they come near our coasts. As this will be done in daylight our airship can signal back to our aeroplanes, and then it can shadow, or pursue, or keep in touch with the enemy. By its superior speed it need not be forced to give battle. Very pretty strategy will come into play.



If by any chance a copy of our current issue should find its way through devious channels to the land across the Rhine I doubt not that there will be rejoicing, especially if it happens to fall into the hands of anyone connected in any way with one of the numerous aeronautical *Zeitschriften*. What a fine illustration our page of photographs would make for the German press, of the damage done by German air raiders. It would not, of course, be strictly in accordance with the truth, seeing that the sheds simply proved the oft repeated saying that anything will fly if you pile on enough horse power. As a fact, the damage shown in our illustrations is to the Hendon sheds and was caused during the recent violent storm. The sketches, for which we are indebted to Mr. K. J. Key, compare very favourably with the photos. as regards correctness of detail. Fortunately as far as I have been able to ascertain no one was seriously injured, although at least one of the members of the L. and P. contingent was in one of the sheds at the time and had some considerable difficulty in worming his way out between the maze of tangled wires, walls, windows and wings. Some of the machines in the sheds occupied by the Admiralty were severely strafed, a Thomas biplane, a Deperdussin monoplane and a Voisin pusher being among the cripples found in the *débris* next day. Unfortunately the new L. and P. tractor biplane, designed by Mr. Fletcher, which was nearing completion, was not exactly improved by having to provide a landing ground for the corrugated iron roof. The damage is, however, confined to a broken *fuselage*, a wing spar and a few ribs, so that the delay in finishing this 'bus should not be over serious.

x x x

The material damage caused by the storm, although in itself insignificant enough, is regrettable on account of the fact that all the sheds affected were among the first to be built at Hendon. The L. and P. sheds, in the old days when Hendon was making history, used to house the Blériot school, and on the new tumbled down wall can still be read and seen names and caricatures of such old-time Blériot pilots as Garros, Beaumont, and poor Prier. In the next two or three hangars, which are now labelled Aircraft Manufacturing Co., and which were at the time of the storm being temporarily utilised otherwise than by that company, the old Valkyrie monoplanes, and later the Viking biplanes first saw the light of day. It



Not the damage caused during a recent Zeppelin raid, but some of the sheds at Hendon strafed by the recent gale, as sketched by Mr. K. J. Key.

seems a pity that these ancient sheds which witnessed the trials, successes and failures of those early pioneers should have been levelled with the ground, but at least there is some measure of consolation in the fact that for the most part they can be rebuilt, to a large extent, out of the old material.

x x x

At last we have, without the shadow of a doubt, bagged a Zep. The "L. 19," which was found floating in the North Sea some months ago may or may not have been damaged while over this country. On the other hand, it may have been forced to come down by some defect that had nothing to do with our aerial defence, and may never have been inside our coast line at all. The "L. 15," however, was undoubtedly crippled either by gunfire or by bombs dropped from one of our aeroplanes or possibly both. If the report be correct—as it seems to be—that she sank in shallow water, it may be found practicable to raise her, although if we are not pretty smart about it the sea water will probably get to work on the aluminium framework and destroy many of the constructional details which might otherwise give us an insight to the principle of construction of one of the latest Zeppelins. At any rate, the salvage of such things as engines, propellers, and perhaps armament may afford a study of some usefulness. If, indeed, it be the intention of the powers that be to continue the experiments with rigid airships that were commenced some years ago without great success, the information that may be gathered from an inspection of the wreck of "L. 15" in connection with what is already known, may save a not inconsiderable amount of time and money by enabling us to find out what has taken the Germans a number of years to learn. Apart from this possible usefulness of the wrecked Zeppelin, the bringing down of "L. 15" is a matter of gratification, showing, as it does, that although still being far from perfection, our aerial defences are capable, under certain conditions, and with a modicum of luck, of strafing the strafers. It would be folly to imagine that, because it has been done once, it will necessarily be done again immediately. As if to prove this, the Germans lost no time in sending further batches of raiders on the Saturday and Sunday night following. This, as far as we are aware, is the first time there have been raids on three consecutive nights, but with fair weather coming along it is only reasonable to suppose that in the near future Zep. raids may quite conceivably be a daily, or rather nightly, occurrence. Whether or not we shall succeed in adding further Zeps. to our bag remains to be seen. In the meantime we should see to it that all is in readiness to meet attacks on a scale far in advance of anything that has been attempted so far. Opportunity to demonstrate high efficiency will surely be forthcoming.

x x x

Whether the Zeppelin so successfully bombed by Lieut. Brandon, R.F.C., is the one that came down in the Thames estuary or whether his bombs damaged another of the raiders, which may or may not have suc-



ceeded in reaching home, is a question that remains unanswered officially up to the time of going to press. Quite possibly it will never be answered. But at any rate there does not appear to be any doubt that at least some of the bombs found their mark, and all credit is due to Lieut. Brandon for his plucky deed. As so many others of our best pilots, Lieut. Brandon hails from New Zealand, where, before the war, he was practising at the bar. While in his native country Lieut. Brandon chanced one day to see an advertisement of the Hall flying school—"FLIGHT" has a very large circulation in

New Zealand. He wrote immediately and was accepted, and joined up in August of last year. In less than two months—seven weeks to be exact—he obtained his "ticket," and a very good one it was too. During the altitude test he had the unpleasant experience of losing himself in the fog, and instead of landing on the aerodrome he came down somewhere out Edgware way, making a perfect landing in a field. Bracketed congratulations to Lieutenant Brandon on his achievement and the Hall school on having turned out a Zeppelin "strafer."

ÆOLUS.

## FLYING AT HENDON.

THINGS appear to be brightening up at Hendon, and we may look forward to having some pleasant week-ends at the aerodrome, free from mud and with plenty of flying and visitors. Last Saturday and Sunday fine spring weather brought up quite a number, but for some reason or the other advantage was not taken of this state of affairs in putting up a show of flying worthy of the occasion. Perhaps it was because the powers-that-be were taken by surprise, and were not prepared for such fine flying weather and a decent "gate." However, the flying that did take place was both varied and interesting, so the visitors were hardly disappointed. The renovated refreshment pavilion in the paddock was much appreciated, and was well patronised. The scheme of decoration adopted—dark oak panelling, white walls, and red-tile floorcloth—is pleasant and effective. Another popular "side-show" consisted of the blizzard strafed hangars and their contents. To look at the wreckage one can

hardly believe that the wind alone was responsible and not Zeps. ! Several passenger and exhibition flights, on 60 h.p. G.-W. 'buses, were made by Marcus D. Manton, C. Pashley, J. S. B. Winter, B. F. Hale, and M. Osipenko.

The last-named pilot made a test flight on one of the G.-W. 'buses fitted with a 60 h.p. Green engine. Some service machines were out, a B.E. 2c, an F.E. something-or-other, a De Havilland scout, and a twin-engined Caudron. A certain amount of school work was also put in, the L. and P. School having retrieved one of their 'buses from the strafed hangars. Some of the Hall pupils got in some practice. Exhibition flights were also made by R. Kenworthy on a 50 h.p. Beatty-Wright biplane.

On Sunday it was somewhat windy, and most of the previous day's pilots were out giving exhibitions. Many old friends, mostly in khaki or navy-blue, were to be seen on both Saturday and Sunday.

## THE AIRMAN.

HIGHER than the steeple-top,  
Shrieking, humming over trees,  
Up above the land and sea,  
Flies the airman blythe and free.

Hurrying on with bombs to drop,  
Banking, warping, cloudward flees,  
Sweeping, buzzing, like the bee,  
Onward to—eternity!—H. E. W.

## The Latest Curtiss Flying Boat.

MR. HENRY WOODHOUSE, a Governor of the Aero Club of America, who has just returned from an inspection of one of the latest Curtiss flying boats, gives the following account of the 15-ton cruiser:—

"This giant flying yacht without its wings looks not unlike a whale with windows and extending fins on the fore part of the body. The body without the rear rudders is 55 ft. long. At the widest point the hull is 10 ft. wide. On each side of the body there are fin-like planes extending out 5 ft., and about 15 ft. long, which will, when the machine is driven at a certain speed, make it possible to rise freely from the waves.

"I went inside of the hull and stood in each of the three compartments, or cabins. The main cabin is 19 feet long, 8 feet wide, and 7 feet from floor to ceiling. In the pilot house there were six men working. Over the boat body is a cabin fitted with windows, forming an enclosed pilot house. There is a false keel with bilge pumps; and three water-tight compartments at the stern and two at the bow—to prevent sinking if there should be punctures.

"I saw the wings of this giant flying boat assembled in another department. Being a triplane, there were three wings superposed, about 133 feet over all, with substantial struts between them. Elsewhere I saw the making of the four motors of 250 horse-power each, which are to drive large propellers. These motors are 12 cylinder Curtiss and made in the Curtiss motor factory at Buffalo. These motors are mounted between the planes, where they are easily accessible to the mechanics who will attend to them while the aeroplane is in the air. An additional motor of 80 h.p. will operate a screw propeller to use when the machine goes in and out of small harbours, to stop it by reversing of propeller, and other purposes for which it is unnecessary to set the large motors going. When on the water this machine is like a yacht and is piloted in a similar way, being controlled by a water rudder; when on the air it is controlled as aeroplanes are, with vertical and horizontal rudders.

"The weight of the machine complete will be about 20,000 lbs. Besides the weight it will lift about five tons of fuel, passengers and useful loads.

"It could easily carry four men and supplies and the fuel necessary for crossing the Atlantic—which it could do in about thirty hours.

"This means that before another year has gone by there will be a flying yacht twice as large as this one constructed. Glenn H. Curtiss, who has always started on improvements as soon as a type was under construction, believes that there is no limit to the size of an aeroplane, and, given the opportunity, he will start building a small air liner with a wing span of 300 ft., capable of carrying twenty people across the Atlantic, or fifty people on a 1,000 mile cruise."

## The Trans-Atlantic Flight.

"MR. JOHN WANAMAKER, the millionaire merchant, of Philadelphia, in a letter to the Aero Club of America has announced his intention to attempt a Trans-Atlantic flight in a heavier-than-air machine next June," according to the *Daily Telegraph's* correspondent in New York. "Mr. Wanamaker, it will be remembered, intended to make an effort in the summer of 1914 with Lieutenant John Porte, R.N., now Commander, as navigator, when the European war stopped his plans. The new machine with which Mr. Wanamaker hopes to cross the ocean in one flight is now being constructed by the Curtiss Aeroplane Company. It will be a seaplane of huge proportions, and will have ten times the power of the old America. Although no details of the new machine are yet published, it is known it will be equipped with six 12-cylinder motors of 300 horse-power each, and will probably be able to make 100 miles an hour, with a crew of six and a full load. It is expected the flight, the object of which will be to make a 'purely scientific test of aeronautical power,' will take about thirty hours."

## THE AIR SERVICES IN PARLIAMENT.

ON the motion for the third reading of the Consolidated Fund (No. 2) Bill, in the House of Commons on March 28th, Lieutenant-Commander Dudley Ward drew attention to a speech made by Mr. Joynson-Hicks a week previously, in which officers in authority at Ramsgate were charged with neglect of duty during the air raid of March 19th, with the result that a certain number of lives had been lost which otherwise might have been spared. Referring to the statement that in February last the naval authorities had notice that a Zeppelin was in the vicinity at 6.20 in the afternoon and that they did not inform the police at Ramsgate of the danger until 7 or 7.30, he said the explanation was that the Zeppelin was going in the other direction. People were only warned in districts towards which the Zeppelin was going. As to last Sunday week, six minutes after the aircraft were observed over Dover, which was 20 miles away, aircraft were observed over Ramsgate, and as soon as it was certain that they were enemy aircraft, the order to blow the alarm was given. He believed the hon. member's complaint was that when the aircraft were observed over Dover warning was not given to the inhabitants of Ramsgate. It did not follow that because the enemy aircraft was over Dover it would go to Ramsgate. In fact, different aircraft attacked Ramsgate. The hon. member said that aircraft were observed approaching Ramsgate at 2.10, and that at 2.15 the attack was over. That did not allow much time for giving notice. In point of fact, he believed the time was slightly longer, and that the raid lasted about nine minutes. The assertion that the officers in authority were at lunch and had left no subordinates in charge, had not the slightest foundation, and was absolutely contrary to the fact. At the naval station at Ramsgate there were responsible officers whose duties were to keep watch, and at no time from the beginning of the war had a responsible watch-keeping officer been off duty. The statement of the Mayor that if warning had been given lives might have been spared was a disgraceful statement for him to make, and still more disgraceful for a member to repeat in that House. He was himself walking in the streets on the occasion in question, and they were full of people. When they knew German aeroplanes were coming over they all flocked into the streets to look at them. A certain number of people owed their lives to not having remained in a house where a bomb fell a few seconds after they went out. Safety was a matter of chance.

Mr. Joynson-Hicks said that before this raid, owing to the member for Thanet being on service, he had been approached by the inhabitants of that division. He saw two mayors of adjoining towns, and he had since had confirmatory letters from the mayor of another town in the district. He had taken, and was taking, every possible means to inquire into the truth of these statements. He had told the House that no siren was blown till after the whole of the bombs had been dropped, and he took every possible means to satisfy himself that that was correct. He had in his possession a report from the engineer of the borough of Ramsgate. The siren was blown within 10 seconds of the telephone message from the naval authorities giving permission for it to be blown, and the raid was over by the time the siren was blown. His hon. and gallant friend said that warnings could not be sent to everybody at once, but on the occasion in question it took an hour and 17 minutes to warn the towns in turn, and poor Ramsgate did not get its turn until an hour and 17 minutes after the aircraft were first seen. It was the duty of the naval and military authorities to warn all places whenever there were hostile aircraft within 30 miles.

He was accused of having made most unfair charges against the officers of the aircraft service at Ramsgate; but he was prepared to read statements made by the councillors and burgesses of Ramsgate. There were three principal naval authorities at Ramsgate, Captain Tomlin and two lieutenant-commanders. He had absolute proof that firing was heard off Dover and Ramsgate long before the raid took place, and he affirmed that as soon as firing was heard off the coast it was the duty of one of these officers to be at the office to receive telephonic communications and any necessary orders. (Mr. Dudley Ward: The only officer having authority to give warning was Captain Tomlin.) The other officers did not arrive until after the raid took place, and Captain Tomlin did not leave his house until after the bombs had fallen.

Mr. Joynson-Hicks, resuming, pointed out that his statements had been described as untrue and disgraceful.

Mr. Dudley Ward: I saw Captain Tomlin at his office before any bombs were dropped, as the seaplanes were coming over the sea front.

Mr. Joynson-Hicks, having the statements prepared by the Mayor and Town Clerk of Ramsgate before him, felt bound to press for an enquiry.

Mr. Marshall was persuaded that it was the system of watching for aircraft in the Isle of Thanet that should be criticised. He had been a spectator of at least three air raids, and he had come to the

conclusion that it was of the utmost importance that the observation posts should be properly chosen and that the latest information should be sent to the places from which remedial measures could be taken.

Mr. Pemberton-Billing, replying to the challenge of the Under-Secretary for War, with reference to his speech last week, said the right hon. gentleman made a rather passionate attack upon him; instead of what he suggested would have been better, a dignified and complete denial to his charges, instead of replying simply to the one dramatic note he struck on the question of our pilots being murdered rather than killed, owing to their being asked to accomplish tasks which the machines were incapable of accomplishing. In these circumstances he should like to make the following statement: namely, that if the officials who were responsible for deciding types of machines in which our officers were to take the air failed either by ignorance, intrigue, or incompetence to provide them with the best machines that this country could produce, they were guilty of a crime for which only a fastidious mind could fail to find a name.

Since his speech in the House last week he had been inundated with letters from gentlemen anxious to support him with documentary and oral evidence. While it was not his present intention to mention names, he was perfectly prepared either to place the evidence he possessed, which contained names in all cases, on the table of the House, or to show it privately to any member in the Lobby.

He proposed to read extracts from several letters received by the father of one of our gallant officers who had since, quite recently, met with one of the regrettable accidents he had referred to, in which he unfortunately lost his life, thus robbing the country of one of our most capable airmen. The accident in question was as follows:—"The officer was so dissatisfied with the machine, which had recently been repaired, that he would not allow any pilot under him to fly that machine unless he personally proved it." The proving cost him his life. The same officer before his death wrote from Dover to his father as follows:—"It is not only a war flight base, but a school." This officer also stated, referring to the Dover aerodrome, and he could substantiate the statement from personal experience:—"This is a very devil of a place to fly in. The aerodrome is situated on the top of the cliffs and on two sides we have a beastly drop. If one's engines fail when getting off, the best thing one can do is to pray and hope that the bump won't be too big when it comes. I was nearly caught this way to-day." The aerodrome was unsuitable and absolutely dangerous for the training of young pilots, who frequently arrived there and were put immediately on fast war flight machines, never having flown anything more than a box-kite. Referring to another incident, the same officer wrote to his father:—"Yesterday my engine back-fired. Trouble inlet valve. The same thing happened at Lewes. Carburettor caught fire. Most unpleasant. One gets cold feet. Sooner come down with a bump than be cremated in the air." This all had reference to machines to which he would refer later on, the engines of which were considered by most of the pilots to be unsafe and unsuitable. This officer was lately sent to Hendon to take a war flight machine to France. Here was an extract from his letter:—"After spending some days at Hendon trying to get the machine airworthy, in desperation I started off." He wrote later:—"My engine most alarming. Very busy looking for possible landing grounds. Very wet. Seeing hardly anything. Engine started to give up ghost. No pressure in tank. Had to come down. Spent whole afternoon trying to get beastly engine to go. Awful dud." This officer eventually arrived at Folkestone. He reported later:—"Took the air from Folkestone. Still in the 'dud.' At 3.15 circling round for 15 minutes trying to get 2,000 ft. At that pushed off across Channel. Engine developed alarming vibration. Hardly hoped to reach other side. Arrived Calais at 1,500 ft. Struggled up coast to here."

Any service man would know that a machine which was only capable of rising up to 2,000 ft. in 15 minutes was not a very suitable machine in which to start off across the Channel. The alternative was to come down and be accused of being a coward, or push off across the Channel, and chance diving into the Channel, thus causing a loss to this country of another valuable life. This officer also wrote:—"The beastly thing caught fire." From the father of that officer, who was a most respected citizen, he had received the following letter:—"Dear Mr. Pemberton-Billing,—In pleading the urgent and vital necessity of furnishing our flying men with the most reliable machines that brains, money, and energy can provide I consider that you are performing a great national service. My son, who served as an officer in the Air Service from the outbreak of the war until the time of his death, repeatedly told me that, to use his own expression, with the 'dud' machines they were frequently called upon to fly, if they were not killed in action it was only a matter of time before they would meet their death from



accident; and this view I have had invariably confirmed by the large number of flying officers with whom I have come into contact. In fact, I know that many pilots consider the risks from having to fly faulty machines greater than those actually incurred in meeting the enemy. It would therefore appear obvious that a superhuman effort should be made to diminish this risk, and surely such an effort should demand universal support."

By way of comment he might inform the House that our machines were dispatched to France in most cases as aeroplanes only. On their arrival the local squadron smiths did their best to convert them into weapons of war. A gun is struck here and a bomb is hung on there. The performance of the machine loses 10 to 20 per cent. of its efficiency. For example, the official speed of a BEZC (sic) was something less than 80 miles an hour. That in all conscience was too low when that machine was called upon to fight a Fokker or other German machine with a speed of 110 miles an hour, whereas by the time it had been turned into this travesty of a weapon of war its speed was reduced to about 68 miles an hour.

He held in his hand a list, which he had compiled very rapidly, and which was far from complete, of over 150 deaths, over 160 wounded, and over 105 men who were numbered among the missing. In regard to the men who had died they could in most recent cases be referred to as "Fokker fodder." In almost every case they had been shot down on the hopelessly outclassed machines by the immensely superior machines which the Germans brought against them.

Not 20 miles from there there existed the finest machine the world had ever seen, far finer than the Fokker machine, finer than anything the Germans had produced, and yet we were content to order this aeronautical rubbish in thousands. We were prepared to order machines from the Royal Aircraft Factory with engines untrue and untested, and order pilots into the air to meet their death. Those men who had only been wounded owed their lives to Providence despite the official negligence and incompetence, but the missing in all cases had been lost to this country on account either of "dud" machines or inefficient engines.

He would deal with a few typical cases from a list he had. He did not wish to shock the House with more cases than were absolutely necessary to prove conclusively his statement of last week. He would deal with one or two cases of men who had been killed in the recent fighting. If the Under-Secretary would like the men's names, the machines they were flying, and the place and date of their death, he would be very pleased to assist him at his convenience. No. 1 is one of the first deaths in the war, though there have been many deaths owing to official negligence before the war. It was a side-slip owing to being sent off in a badly overloaded aerial machine. It was suggested before leaving that an accident would occur. An accident occurred, and the pilot died. No. 2. B. 28. Side-slip; nose dive; bombs blew up every one on board machine. Similar to that which killed two pilots previously; therefore liable to uncontrollable spirals. No. 3. Passenger was Lieut. S. B. Same accident, but bombs did not go off. Both killed. No. 6. Victim of engine failure. Lost at sea.

This question of engines was a question of life and death to our pilots, and if the mandarins were allowed to order any engines which they thought fit to order when they were not competent to decide, and if our pilots had to be driven into the air with these engines, their lives were being needlessly endangered.

Another case, shot down by one of our own machine-guns through the obstinacy and stupidity of a brigadier of our own. Two men killed. Shot down near Dixmude. Machine overweighted, and should never have gone over the line. Case 11. Machine caught fire in air with experimental R.F.A. engine. Bombs on board burst, pilot burnt to death in the air. Case 14. Lost at sea flying home on leave with old machine.

It was a very pernicious habit in France when there was an old machine which they wanted to get back and which was of no use for any further service, that if a pilot was going home on leave and he liked to go home in it he could do so. It was a dangerous habit to endanger a valuable pilot's life to get an old creak of an aeroplane back to England, and thus save transport.

No. 16. Machine known in the trade to be dangerous, collapsed in the air, killed the pilot. No. 18. When landing, nose dive, engine failure over sea. No. 19. Bombs blew up on landing, killed. No. 20. Side-slip; people without experience should not have been flying alone; killed. No. 24. Spiral dive 300 ft. over the sea; killed. No. 30. Shot down, flying low in bad weather; died of injuries; ordered out on bomb raid in the dark and rain. No. 32. Drowned or killed in a side-slip through over-loaded machine. No. 34. Killed in a side-slip under circumstances typical of this type of machine. No. 35. Died of wounds received because of machine being unable to climb after coming down low to drop bombs; engine weakness again. No. 37. Both lost at sea, engine

failure presumed. No. 43. Killed; reported death was caused by bombs exploding in the air.

No. 45. Killed, landing in a morning fog after flying all night in a fruitless search for a Zeppelin; the usual official overloaded machine was unable to land slowly and turned over on its side. No. 46. Machine hit by German shell while on water after being brought down by engine failure. No. 47. Fell out of machine in the air; propeller broke.

This was a most regrettable accident. It happened to a young man who had just succeeded in winning the Victoria Cross amid the cheers and admiration of the Empire—a most regrettable and most unnecessary accident. If the First Lord of the Admiralty would like full details he should have them.

No. 48. Brought down by engine failure; killed on landing. No. 49. Engine broke in the air, side-slip and dive. No. 60. Killed in the dark after futile attempt to find Zeppelin; no light for landing.

At present the method employed was to drive men up into the air on machines in which the engine and propeller were in front, and the pilot was unable to see except on his extreme right or left. His face is covered with oil. He was ordered out at night and had been told repeatedly to bring out their machines in a thick land fog. Someone ran up with a few buckets and put petrol in and lighted it, and that was the only light they had got. These men were driven up into the air in machines in which they could neither see nor shoot out of, and the armament in one case was a revolver and in another a Winchester repeater rifle. What justification was there for driving our pilots in the air so armed and so equipped and in such machines that they could not see out of? Simply to answer public clamour or to save the face of official folly.

No. 67. Brought down by engine failure; killed. In this case the machine was totally unsuitable for the type of work. No. 70. Killed in action while testing a type of machine condemned by the French six months ago. No. 71. Killed owing to defective engine. Nose dive. Caught fire. Pilot burnt to death. No. 76. Killed by his own bombs exploding after landing in dark, after searching for Zeppelin. No. 80. Machine caught fire on landing. Pilot died. No. 94. Killed in a side-slip with worn out machine. No. 99. Killed. Engine failure. Side-slip and dive. No. 104. Two officers, observer and pilot, both killed on photographic duty because they were hopelessly outclassed by the enemy machine. They had no fighting machine with them to protect them on that work.

He asked the House to imagine a pilot in a groggy old machine, tottering in the air over the enemy's lines, knowing he had only about 72 miles an hour in hand, nothing but gadgets all round him which the official experts loved to load on the machines. He had no guns, as the Germans had behind them and in front of them, and he saw an enemy aeroplane which had two guns, one fitted for firing dead ahead through the propeller and one dead astern, and which could fly not 72 miles an hour, but perhaps 110 or 120. He felt this machine circling round him, diving and shooting up and rising above, and he was helpless as a duck, absolutely ready to be shot down. When they thought that these men had proved themselves to be not only the most able but the bravest airmen in the world, when they thought they were driven into the air to be slain like that, it was difficult to find a better word than the one he had chosen.

He did not want to exhaust the House, but he had 105 cases of missing officers. All of these men, had we had decently engined machines, would either be in this country now or fighting our battles in the air to-day, instead of which they were suffering an indignity which, he understood, in some cases was even worse than death to which prisoners of war in Germany were treated. Here was one case. Two of the most able officers in the Service were sent up on a long reconnaissance on an old machine capable of doing 45 miles an hour with a fair wind behind it. One officer said before he left that, although he could get there, he would never get back, and his words proved true. The machine never returned. The cases of wounded were almost too numerous to mention. Here was one in October. A machine was flying for photographic purposes over the enemy's lines, and both pilot and passenger were shot. Hon. members had read something of that case. Although the pilot was shot, the observer managed to struggle into a position and landed the machine within our lines. For the past two years people who really understood, but cannot obtain a hearing, had been advocating that no machine should fly under any circumstances whatsoever unless it was fitted with dual control. There was absolutely no reason why this should not be the case. It meant that if a machine was flying over enemy country and the pilot was shot, the observer could take charge. Any man who had flown for ten minutes in a dual-controlled machine could bring it back to earth perhaps with a little bit of a crash, but he could guide it back again. It meant that not only would valuable information be saved and



brought to our generals, but that the life perhaps of a pilot and certainly of the observer and the machine itself might be saved from total loss.

He would like any hon. member to picture himself in a machine absolutely alone walled in by wires, with a pilot somewhere behind. He heard a gasp and a cry and turned round and saw that his pilot was dead. He was sitting there helpless at 11,000 ft., the machine diving and sheering in all directions, and knew that the moment would very soon come when she would get into a nose dive and he would crash 11,000 ft. and be smashed to pieces simply because of the foolish folly of these officials who did not understand and would not be taught that dual control in such a machine would have saved that man's life. I would like to have on the floor of the House one of those men who had been through one of these terrible death dives to tell right hon. gentlemen on the Front Bench what it felt like. No time must be wasted. However important the debates in this House might be, our national existence depended on the issue of this subject. No time ought to be wasted. However important the debates in the House might be our national existence depended on the issue of this subject—if not to-day, in the days to come. All around London were these accursed old groggy machines, these badly lighted or unlighted aerodromes, and these heroes sitting and waiting to go up to save the face of those who were set in authority over them, and who had failed them every time. It was frequently difficult even in law to draw a hard-and-fast line between murder and manslaughter, or, again, between manslaughter and an accident caused by criminal negligence. When this negligence was caused by the official folly of those in high places, coupled with entire ignorance of the technique which, in this case, could alone preserve human life, official folly became criminal negligence, and when the death of a man ensued the line between such official folly and murder was purely a matter for a man's conscience.

Sir Alfred Gelder said that he felt very strongly that the Government after two years had not made efforts which were essential to meet the attacks of Zeppelins around our coasts and in these islands. All were desirous of bearing it bravely, if it was felt that the authorities were doing what they could to help the people to meet this evil. He was informed that the question of defending the coast from air raids had been a year in the hands of the Army authorities, who had done nothing. Of course the naval authorities were not to blame. In regard to the future they said they intended to make the air service on the east coast efficient. A week or two afterwards one or two motor aircraft guns were paraded through the streets of the city to which he particularly referred. It was naturally imagined that they were for their defence, and the people were very delighted. But no more was heard. They were there for two or three days, and were then taken to another place for a similar purpose. After his first interview with the Admiralty, twelve months ago, and after they had paraded these guns through the town, the military did another thing. On one of the large engineering works in the city he was referring to, a solitary gun was fixed and a military guard was mounted by day and night over that gun. All thought that that was part of the equipment to protect the city, but it was found afterwards that it was only a dummy gun. (Mr. Joynson-Hicks: "Quite true.") At a private meeting two generals were present, and I told them exactly the same thing, and offered to apologise if I was mistaken. Immediately the Chief Constable jumped up and said: "There is no occasion for apologising; it was a military performance." Why was that done? (Mr. Billing: "Bluff.") He thought it was done to allay the fears, the suspicions, and the anxieties of the people, and if that was so, such deception was unworthy of the military authorities or of any general staff allowing it to be done. (Mr. Billing: "To save the Government's face.") He was glad, however, to say, that during the past two or three weeks some efforts had been made to improve matters after they had had an interview with Lord French, and he hoped that what was being done would be a complete defence. He believed that with efficient guns and aeroplanes the Zeppelins would be prevented from doing what they did on the last occasion they were there; that is, to stop their machines until they found their bearings exactly over the place where they were nine months before, and to drop three bombs within 20 ft. of each other. There was a design, a method, in their operation, and if the East Coast towns were left defenceless and the Germans got to know this, as they would get to know it, if they came once or twice and had no reception, it meant the blotting out of some of these places.

Coming to the question of lights on railways, when the Zeppelins came to the north-east part they followed the railway lines right away to the city. The railway companies ought to be made to put out their lights. If the trains all stopped there was no reason why the signal lights should not be put out, and there was no doubt that these large number of signal lights in towns were, with the lighting of buoys and revolving lights on rivers, a great and unerring guide to Zeppelins. The First Lord of the Admiralty, speaking a

fortnight ago as to the building of lighter-than-air machines to meet the attacks of Zeppelins, said that they could have built these craft, twenty of them, but they could not get the sheds built. He, the speaker, was free to say that if they would grant to the builders on the east coast the proper facilities for material and the use of the railways, &c., they would undertake to build these twenty sheds, large enough to hold the largest dirigibles, within six months from that date. He would stake his reputation upon that. Any official who made the statement to a Minister to the contrary was absolutely incapable. If the machines could be provided, there was no difficulty in providing the sheds for them.

Mr. Lynch said that he advocated a large aeroplane fleet, far larger than anything yet held in contemplation by the Government, and that he was in opposition to Sir A. Gelder in regard to the building of lighter-than-air machines. He believed that we had in our hands a stronger instrument—the aeroplane. The Zeppelin menace could be completely met by the construction of suitable aeroplanes, but the conditions necessary did not at present exist, partly because the air service was subject to two controls, and the problem of regarding the Air Service as a totally distinct service without necessarily interfering with the subsidiary part of the Admiralty and of the Army in regard to an Air Service, had not been sufficiently studied. His point was that if a separate department were created with separate construction, control, and responsibility, regarding this as a purely separate arm for independent purposes, it would still be necessary as a subsidiary part of the Navy and Army. Therefore what he proposed was not to take the Air Service entirely out of the Army and Navy, but rather to develop even more strongly those branches which were necessary to those particular services, but, independent of them altogether, to form a new arm with a definite task in view, with a definite object, plan and course of action. The raids by aeroplane in various parts of the world, from Metz to Schleswig or the shores of Belgium, against Zeppelin sheds, &c., should be regarded as valuable rather by way of ascertaining what were the powers of the aeroplane, than as showing results which should be viewed as the high-water mark attained, or that they should necessarily be continued on those lines. Instead of being content with a raid of 20 or 30, or even 50 aeroplanes, upon some vulnerable base of the Germans, it should rather be sought to build 10,000 aeroplanes or even 20,000, and these should be used as the deciding factor in the war. If a competent man were put at the head of a department specially created for that purpose all objections would be found to vanish. Once we had this fleet of 10,000 or 20,000 aeroplanes, we should be masters of the situation. That was the plan he put forward without working it out in detail. They had to rise to a conception that this arm could be made a great and decisive factor in the war, and all obstacles in the way to that end should be removed. And once the House made up its own mind that these difficulties could be removed, the object sought would be realised.

Sir A. Markham said that he hoped that the War Office would continue the policy of not disclosing to the Germans where their airships had reached. He also asked the Under-Secretary for War to give positive assurance to the House that no man, owing to the exigencies of the service, would be sent up to fly a machine which would be so dangerous as to constitute what the member for Hertfordshire had said was "technical murder." (Mr. Billing: "May I suggest that the question should be that there should be assurances that officers are not being sent up in machines to accomplish a duty which the machine is totally unable to accomplish.") What was wanted was an assurance that there shall be indiscriminate scrapping if there was a machine which was dangerous. He thought the fact should not be overlooked that the Germans had lost a great number of Zeppelins which carried from 20 to 30 men. That was what occurred when you are dealing with experimental machines. In this country we were in the position of having to deal with the aeroplane service, and in the progress of development they had had, unhappily, loss of life. The main point was whether this country had the ascendancy in the past or not. (Mr. Billing: "May I suggest that in speaking of the ascendancy of England we also include France, which is twice as efficient and has twice as many machines, and Russia, which is almost as great, and we also include Belgium.")

The Speaker: "The hon. member has made his speech."

Sir A. Markham, continuing, said he thought that the member for East Herts would have performed a public service if his remarks brought home to the War Office the fact, if it were a fact, that we were not supplying our airmen with good machines, and sending our men to fight the enemy with machines that ought to be scrapped. He did not know whether the losses had been greater in the Flying Corps than amongst the men in the trenches. Those men in the trenches had been fighting without machine guns, and without proper weapons to put them on equal terms with the enemy, and the same thing, he thought, had probably happened with the airmen.

Capt. Bennett-Goldney said that the Under-Secretary for War objected to members attacking the War Office by telling them to wake up. He would recall the opinion of a famous Victorian statesman who used these words: "The administration which tries to stifle honest criticism is but the architect of its own misfortunes." He thought that the country's present unreadiness in air defence was very largely due to the fact that the House of Commons had permitted the War Office to neglect their duties behind the screen of comforting assurances. The country had been misled, and there had been too much of the present War Office policy of concealment and make-believe. Our Air Services, he honestly believed, had been shockingly neglected, and he saw no military reason why the Government should not frankly admit it. What was wanted was a capable and permanent administration with one main control. By all means let the Navy be left with its own particular and special wing under its own orders, but we should never have full efficiency in every branch of the Air Services without unity. Business methods were not sufficient if they were only to be used in regard to production. In regard to the estimates of the number of Zeppelins which the Germans are supposed to have at present, he had good authority for saying that they had 43 only three weeks or so ago. Referring to the recent Kentish air raids, in regard to which he had made certain statements as to what happened upon that occasion, and the answer to his statements by the Under-Secretary for War in that House, in which it was suggested that his facts were no more than rumour and should receive the earliest contradiction, he maintained that he dealt with facts and not with rumours. After describing in detail the evidence on which he based his statement, he said that he adhered to all that he had stated with regard to that air raid, and he hoped that the present divided counsels would not give another exhibition of such a lamentable nature. He held very strongly the view that we wanted a Director of air policy. They wanted to put an immediate end to the mischievous jealousy and friction which still existed, not only between members of the naval and military Air Services, but between some of the very highest officers now controlling them. These quarrels had become a scandal. Lord Derby could not do the country a greater service than by insisting on more harmony, both between units and persons.

Sir W. Pearce said that to his mind the importance of aerial warfare grew day by day, and demanded the highest scientific and engineering intelligence of the country. We seemed to have given up any idea of being able to compete with the German Zeppelins, but he thought that observation pointed to the fact that in naval warfare they were being used as scouts to the fleet. He hoped that it would not be impossible for the Government to be able to make provision to give our fleet a similar system of Zeppelins, as he believed that this was going to be one of the determining factors in the war. As far as aeroplanes were concerned, here again if we lost ground it was surely the fault of not bringing under contribution the scientific and engineering ability of the country. Although he had been a careful listener to many of the debates in that House of late, he had failed to discover who was the real culprit in not getting the best ability that the country possesses. He thought that it might very well be that in a comparatively few years that in the great advance in science that aerial warfare would be the real determining factor in any contest between any two or more countries.

Sir Alfred Mond said in view of the power which the possession of a very big fleet of aeroplanes gave to any country, that it was not possible to continue treating aircraft as if it were something which was merely an adjunct to observation, for scouting or for bombing under the direction of a Commander-in-Chief, or for scouting or other purposes under the First Lord of the Admiralty. Quite apart from what may be called the adjunct service of air, there was such a thing as air strategy, or air campaigns, which would have to be decided in the future, and the first nation which seized it with energy might find yet in this very war that it had got the decisive factor. He did not believe anyone who thought the question out could say there could be any limit either as to the number of machines or pilots wanted. There were undoubtedly limits as to the number of machines and pilots that could be created in a given time. The question therefore arose, was everything and all being done to create the maximum numbers of machines and pilots? He was afraid everything had not been done, and more could be done than at the present time. He understood that many more engines could have been built than have been built in the past, and that engines of first class engine builders in this country have been refused by the army flying service, although adopted by the naval flying service with very good results. Coming to Lord Derby's Committee, he wanted to know had Lord Derby's Committee any executive power at all, as he understood that it could not order or buy a single engine or a single plane, or make a single suggestion as regards the design of an aeroplane, that it had not a single shilling to spend in any direction

whatever, but its function was to get hold of the representatives of the Army and Navy Flying Corps and induce those gentlemen kindly to help each other instead of getting into each other's way. What we wanted was not only the Committee but an executive body similar to the Explosives Committee, which had done under the chairmanship of Lord Moulton such good work. If a committee were formed of men on the lines of this Explosives Committee with power to design, to provide the different machines that were wanted, and with great powers of spending money where they thought advisable, it would be a great advantage. They were dealing with an experimental service, and if we wanted to experiment, money must be spent, and spent intelligently. If we once had ascendancy in the air service, he thought it was a great pity that we should ever have lost it, and he could not understand why this had been so. He could only think that instead of developing new ideas we had been content with old ones. Criticisms had been made of our airmen by people who understand these matters better than he did, that there had been a great attempt on our part to design and produce one particular machine to carry out all possible objects, with the result that it was loaded with all kinds of paraphernalia, when in order to carry out those two or three objects it would be much better to have a number of machines. The Germans had sub-divided the service of their machines. What we had to do was to individualise our machines more and more. He hoped that we should not have a repetition of what had so often been in evidence, that is a prolonged agitation and reluctant acquiescence, but that we should have in advance a bold, large and determined programme of policy, which he was sure the country would endorse and welcome.

Mr. Hogge thought that in the speech which had been made by the member for East Herts evidence had been submitted to the House which led one to the conclusion that the matter could not obviously be left in the present position, and that the War Office and the Admiralty must meet the charges that had been made in some better way than in debate. It was a matter that could easily be settled, because it was a question of evidence. These questions could be decided by any small body of men, and it seemed therefore that the request made by the member for East Herts to have the matter inquired into was a reasonable one, which the House should agree to willingly. Referring to the Royal Naval Anti-Aircraft Corps, he said that at the moment the members were disheartened by what was happening to the Corps, their places having been taken in many cases by military, and they were placed in a very invidious position altogether. If they were of no other use after all their training, he would like to suggest that in the personnel of the Corps they had men who could easily provide the skeleton of an organisation for the East Coast. They could get sufficient men to man guns similar to those that were being used in London to-day, and if that were done inspiration would be put into a body of men who were to-day disheartened because of treatment which rightly or wrongly they were at present receiving from the War Office or the Admiralty.

Mr. Tennant said Sir A. Mond had appealed to him to throw off what he seemed to think was a slightly wooden departmental attitude, and to confess that occasionally things went wrong. He was as sadly and melancholily aware as any man could be that mistakes had been made, and he was perfectly free to confess it. If, therefore, he did not at every other minute say it he hoped he would not be accused of not recognising it. He did not think it was the business of any Minister representing a great Department in the middle of a great war to appear perpetually in a white sheet. The right hon. gentleman had also objected to the War Office acting in a kind of watertight capacity, and having nothing to do with its neighbour, the Admiralty. He appealed to hon. members to put themselves in his position of having to defend his Department and having no control over other Departments. It was impossible for him to be so concerned at what might have been the responsibility of some other Department, but which was not his.

Answering the points raised by Mr. Hogge, he said the War Office recognised and appreciated to the full the admirable services which had been freely given by the Anti-Aircraft Corps to help the defensive services of the country against hostile aircraft in London. It was not correct to think that the men of the Royal Naval Anti-Aircraft Corps had been replaced by men of the Royal Garrison Artillery. That was the first mistake.

He had consulted the Field-Marshal Commanding-in-Chief, and this was the explanation of the idea which had gained currency. As new guns and new lights were erected in the section of the London defences belonging to the Royal Naval Anti-Aircraft Corps, they were manned by personnel of that corps. This necessitated the transfer of naval personnel from other sections of the defences, and the places of the men transferred were filled by military personnel. Were this not so, each section of the defences would be manned partially by naval and partially by military personnel, and the



concentration of naval *personnel* in one section was obviously the only practicable course to adopt. The men were selected with a view to causing the least possible disturbance to the Royal Naval Anti-Aircraft Corps. As to whether the transfer did not affect efficiency for some time, the answer was that as the new gun or light would be of the same type as that of the *personnel* to which it was transferred no loss of efficiency should arise.

For the first nine months of the war the ascendancy of the British air service was so pronounced as to be very remarkable indeed. What had really been the surprise had been not that the Germans should improve their air service but that they should not have done it long before. I think that that is perfectly true. I know it experienced a certain amount of comment outside, but anyone who really knows what did occur at the front during the first nine or ten months of the war knows it to be a statement of fact. It used to be said, for instance, in the early part of the war, by the Flying Corps, that "if you point an old Maurice at a Hun he goes to the ground at once." It was more than anything else a moral ascendancy, and was not, he thought, due to the superiority of our engines. He believed that when the Germans made their effort two or three months ago, we were infinitely better supplied both in numbers and material than previously, and the quality of the officers was the same. On the other hand the new development came slightly as a surprise after nine months during which nothing of the kind had happened. The Germans had a certain advantage from the novelty of their new trick. But these tactics were now being met quite satisfactorily. Our reconnaissances, though under difficult conditions, were being carried out with the greatest possible regularity and entirely to the satisfaction of the Commander-in-Chief. Fighting in the air continued with no advantage to the enemy. For the moment the majority of the German aeroplanes were probably faster than the majority of ours, but we could not expect that every one of our aeroplanes should be faster than all the Germans.

We expected to have as good aeroplanes as the Germans, and if possible a larger number of superior aeroplanes. Though at the moment the majority of the German aeroplanes were probably faster than the majority of ours, that state of things was rapidly being altered. There were aeroplanes for different purposes. There were large numbers of reconnaissance aeroplanes, which were armed and usually carried two machine guns. They were very similar to the German reconnaissance machines. There were also a large number of fighting aeroplanes. Letters from officers at the front calling attention to the superior speed of German aeroplanes came in almost every case from those who were engaged on artillery observation and reconnaissance; other officers told an exactly opposite story. The Derby Committee had been set up, as he understood, as a sub-committee of the War Committee, to advise on various matters of policy in connection with material. He had the greatest belief that it would be instrumental in co-ordinating the duties and needs of the Admiralty and the War Office.

He had not intended to give the impression that the Commander-in-Chief was satisfied with the numbers of machines and *personnel* which he had. What he intended to convey was that the Commander-in-Chief was satisfied with the air service which he had. That did not mean that he would not like it to be larger. They might say that Sir John Jellicoe was satisfied with his Fleet, but that would not mean that he would not like another ship or two. The Government were endeavouring with great energy to do every mortal thing human ingenuity could devise to bring our aircraft and air service up to the standard which could be demanded by the public and the commanders in the field. Reference had been made to the refusal of an engine which had been accepted by the Admiralty. If the allusion was to a Rolls-Royce machine, the reply was that the War Office asked the Admiralty, who were conducting negotiations with the firm, to give orders on their behalf.

Sir A. Mond: I should like to know whether it is not a fact that the Rolls-Royce firm offered to put up new works in order to build a larger number of machines than had been ordered, and were informed that that was not required?

Mr. Tennant: I think that that is not the case, but I should not like to say more without consultation, as I cannot give an absolute assurance on the point. As to the testing of inventions, there were two separate bodies which carried out experiments. One was the Inventions Board of the Ministry of Munitions and the other the Inventions Board which was under the First Lord of the Admiralty. Either of those Boards, if they had thought well of the invention referred to by the right hon. gentleman, would have had it taken up, put in hand, and experiments made. These Inventions Boards were bombarded by every kind of person, with every kind of folly, and the House would realise that they had to keep a very jealous eye upon the inventions which were submitted to them before they were accepted. As to the little controversy between Mr. Joynson-Hicks and Lieut.-Commander Dudley Ward, there was no point upon which he did not touch in a previous speech.

Mr. Joynson-Hicks: The right hon. gentleman can leave it alone if he wishes to do so. But the thing is rather awkward, because my hon. and gallant friend made his statement, which I am very loth to contradict. Obviously a statement made by a friend of mine in this House receives from me more credence than a statement from an outside source. I am bound to accept it. On the other hand, the local authorities at Ramsgate do most distinctly controvert that statement. There are five different statements here, which I should be glad to hand to my right hon. friend. They do ask for an inquiry. I must leave the matter there—that is the difference between the two sources of information.

Mr. Tennant: I shall be very willing to inquire into the facts. Mr. Marshall had made observations about the Isle of Thanet and the desirability of putting signalling stations at various specified points which I am bound to say were very undesirable to bring before the House. Mr. Billing had spoken with some heat, with what he described as emotion. It was always a pity to engender heat in such matters. It was very apt to be subversive of light, therefore he must endeavour to follow Mr. Billing without it. He spoke of ignorance and intrigue among the high officials of the War Office. That was a matter on which he had better means for ascertaining the truth than the hon. member, and he could assure him that he was wholly misinformed.

Mr. Billing indicated dissent.

Mr. Tennant: Of course if he will not take my assurance it is no good my giving it to him. He did not know whether the member for East Herts was alluding to the aerodrome under the Military Wing of the Royal Flying Corps at Dover or not. If he was, all he could say was that it was one of the very best aerodromes they had got.

Mr. Billing: I was referring to the naval aerodrome. Last week I put a question in regard to this aerodrome to the First Lord of the Admiralty, who answered it, and to-day I put the question to the Under-Secretary for War both as to the military and naval aerodromes.

Mr. Tennant: I am not able to speak for the naval aircraft, but as regards the military aerodrome I am informed that it is one of the best in the possession of His Majesty's Government. He would like to disillusion the hon. gentleman with regard to the factory at Farnborough. It was not a producing factory in the sense of producing large numbers of engines or their parts, but to assist in the manufacture of design.

In the speech of the hon. member there was a long category of very melancholy casualties. When one was dealing with a very dangerous occupation like flying at a very dangerous time in the middle of a great war accidents must happen. It was impossible to exaggerate the sadness of those things; yet at the same time some of them who had great responsibilities, and who realised the dangers inherent to the kind of warfare and to the conditions of the Flying Corps, had sent their own sons into the Flying Corps, and did not believe they were going to be murdered. His own eldest son was a member of the Flying Corps. So was the son of the Commander of the Flying Corps, Sir David Henderson. As the hon. member had made these statements and had assumed, quite wrongly, that these unfortunate accidents occurred owing to lack of care, owing to faulty mechanism, owing to their being worn-out machines or to the machines being overloaded, he would tell him this—that he would make it his business to have these statements investigated by a purely unofficial body—by a judicial body if possible. When the Prime Minister came back he would ask him whether he would not set up a small judicial body to go through the allegations and list put before the House by the hon. member for East Herts, and to furnish a report so that they might see exactly what had happened. It was not difficult for any hon. member to bring up in a great war lists of casualties and to state facts in relation to individual cases and draw upon the feelings of the House to commiserate with those who had lost their nearest and dearest. But what was on the other side? How many thousands of miles had been flown? How many hundreds and thousands of times had these men gone up and yet nothing had been said about it? They had come back home safe and sound. Anyone who had a friend or relation in the Flying Corps had only to ask him how many times he had crossed the German lines. Many of them had done it hundreds and hundreds of times. Let the hon. gentleman ask any man who knew the facts of the German Flying Corps how many men of their corps had been driven down on their own lines by our pilots. We did not know, they could not tell, because these men had nearly always fallen over the German line, and British pilots were very modest young men. They did not pretend to have knocked out a German aeroplane unless they were absolutely certain and had seen it hit the ground with a smack. It was believed that a very large number of German aeroplanes had been driven to earth, although they could not say so definitely, because they had not actually seen them.

The hon. member had made a very effective point by informing



the House that our pilots were ordered out at night, that they were driven up into the air at night, when they could only be driven to their death. He wanted to assure the House that in no case was an officer ordered to ascend at night to intercept a Zeppelin. Full information was given to those officers who were detailed for defence duty, and full discretion was given to them as to whether the conditions were suitable or not. Sometimes it was difficult to restrain young officers. Sometimes they put a liberal interpretation on the term "favourable conditions." But it was believed that instructions were now thoroughly understood, and would be interpreted in the proper spirit. It had never been intended that officers in a training station should endeavour to attack airships at a great height by night, because the machines in which they were being trained were not fitted to undertake such flights, and, therefore, it had never been considered proper that they should undertake any such task. He wished to make this quite clear, because he understood that there were certain places in England where there had been training squadrons, and where the officers and men had been hooted in the streets for not having attacked the Zeppelins, whereas to attack them with the training aeroplanes which they were using would be useless, absurd, and a waste of human life. Now that he had informed the House that officers were not commanded in any case to go up at night and attack Zeppelins, he hoped the hon. member for East Herts would not consider it desirable to continue in the belief that they were, and that it was not entirely within their own discretion.

As death dives had been mentioned, he would give the House a remarkable instance. An officer made a descent on German sheds from a very great height. He had travelled at a very great rate and he was able to cover eight miles without his engine going. He came down so low upon the sheds that the explosion which took place did great damage to his aeroplane. When he tried to switch the engine on again it would not work and he went right into the

#### Zeppelins and Super-Zeppelins.

AIDED partly no doubt by tales and fables sedulously set adrift in neutral countries and which eventually filter across the North Sea, many people have most extraordinary ideas as to the powers and capabilities of the Zeppelin. It is therefore opportune that Mr. R. P. Hearne, who has given a good deal of time and thought to the question of Zeppelins—and airships to meet them—should have written a book in which he deals with the principles, history, construction, scope and limitations of Zeppelins, besides outlining the part they have played in the war, how to fight them, air raid precautions and other matters connected with the problem, including the provision of what he calls super-Zeppelins and super-aeroplanes for fighting them. Whether one agrees with some of the author's theories or not, it must be admitted that he has incorporated in his book a great deal of useful information without overloading it with technicalities. Not the least interesting part of the book is the large number of illustrations and diagrams. The book, which is published by Mr. John Lane, can be had from "FLIGHT" Offices, price 2s. 11d. post free.

#### Aircraft in War and Peace.

ALTHOUGH Mr. William A. Robson includes peace in the title of his book, naturally the military uses of aircraft take up the greatest part of his consideration. The book, as a matter of fact, is an attempt to sum up in simple non-technical language, the part aircraft is playing in the war, and to indicate the chief directions in which development is tending. For convenience Mr. Robson has divided his book into three parts. The first deals with the use of aircraft in war for scouting, raiding, &c., and besides briefly describing the types in use, also sets forth the duties and work of the Royal Naval Air Service and the Royal Flying Corps. In Part II one chapter, which will be eagerly read by aspirants for commissions in either air service, deals with how a pilot is trained, while it is followed by a description of how an aeroplane is built. In the concluding portion the author puts forward several interesting ideas as to the future of aircraft, from the military, commercial and sporting points of view. The book, which is bound in khaki cloth, and is illustrated by several photographs of various machines, can be obtained from the publishers, Messrs. Macmillan and Co., or from "FLIGHT" Office, price 2s. 11d. post free.

#### Over the Front in an Aeroplane.

THOSE of our readers who remember the thrilling story told by Mr. Ralph Pulitzer, the well-known American writer, of a flight in a double-engined Caudron from Paris to and over the trenches, will be interested to hear that Mr. Pulitzer has now written a little book giving his impressions of a visit to the front, during which he had opportunities of going into the trenches in France and Flanders. The little pen-pictures which he gives are all very realistic and convincing, while the author's photographs illustrate in a striking manner the way in which a modern war is waged. Mr. Pulitzer's story of his flight forms, as a matter of fact, the opening chapter, and that will be sufficient recommendation for those who wish to get a peep at the front to read the book, which is published by Messrs.

German lines, but just at the last moment the engine worked again. Some members thought that the Government had given up the hope of dealing with Zeppelins, but the hope had not been given up. They looked forward to dealing with them more effectively, and were doing all they could in regard to material. He did not pretend that all was as they would wish, but things were better than they had been. After undertaking to have further inquiries made about railway lights during raids, he expressed the opinion that there was a great deal to be said for aeroplanes as against Zeppelins. He gladly gave an assurance that airmen were not being sent up in machines that were not fit. No pilots ascended in machines which, in the opinion of the commanders, were dangerous or unfit for the duty to be performed. This had been the absolute rule of the service at any time during the war. Machines not considered to be really useful were scrapped. Engines were constantly being superseded by better ones, and it was obvious that new engines would not be put in bad or old aeroplanes.

He informed the House that there was an advisory committee, consisting of Lord Rayleigh, Dr. Glazebrook, Mr. Mallock, and Mr. Horace Darwin. The authorities also had the assistance of the National Physical Laboratory in working out aeronautical problems. Before concluding he corrected a false impression produced by the speech in which he spoke of the members of the hierarchy in the air service as having air experience. He had suggested that Sir D. Henderson had spent hundreds of hours in the air, and he was informed that that was an exaggeration, although of course Sir D. Henderson had had experience in the air. Referring to Lord Montagu's allegation that the authorities had only one engine for three aeroplanes, he said he was informed that there were more engines than aeroplanes. He hoped the House would recognise that the subject under consideration was engaging the attention of a very large number of really not stupid people, and was being pushed on with all the energy at their command.

Harper and Brothers, and can be had from "FLIGHT" Office for 3s. 11d. post free.

#### "Air War. How to Wage It."

UNDER this title Mr. N. Pemberton-Billing, M.P., has collected the substance of a number of articles he has recently contributed to various papers. He points out that it is but a sketch of a plan and a policy which is to be more fully developed in another volume to follow. The chapters bear the impression of having been hastily written, and in several places the author is not consistent in his statements when dealing with questions of policy, reprisals, &c. He is more at home on the question of the measures to be taken for the defence of great cities, and the outlines of schemes and ideas put forward should certainly be digested by those who have to study such problems. From this Mr. Billing goes on to make suggestions for the speeding up of the supply of 5,000 pilots, aeroplanes, and engines for an Imperial Air Service, and concludes with a sketch of what he thinks should constitute an Air Minister's duties.

While there is much that is interesting to the technical reader in the book, it is somewhat disjointed to accomplish the apparent purpose for which it is intended, viz., to arouse the general public to the great possibilities which lie before the air service. Distinctly fascinating is Mr. Billing's outline of how the whole country might, in regard to the protection against Zep. raiders, be brought under the control of the "electric button" in one central office. More fascinating, however, we fear, than practical. On the whole, the little volume is eminently live reading. The book is published by Gale and Polden, and can be obtained from "FLIGHT" office, price 1s. 3d., post free.

#### The Overseas Aerial League.

WITH the object of concentrating the interest in aviation which has been aroused in British Dominions and Colonies by the work of the Overseas Club, the latter has arranged with the Aerial League of the British Empire for the formation of an Overseas Aerial League. It is proposed to form branches in the important cities, and so to continue to educate the people to the possibilities of aviation, not only for military operations but for commercial and general purposes, and the governors and administrators of the various colonies are being invited to lend their aid in inaugurating the branches. It is hoped that the work carried out in this way will give an impetus to the study of the science of aeronautics and to the development of the practical uses of aircraft on uniform lines throughout the Empire, and so turn to good account a great deal of effort which might otherwise be wasted. Warm approval has, we understand, been accorded to the project by the War Office, and this should encourage the supporters to go forward.

One important work which it is suggested the branches should take up is the provision of landing grounds or aerodromes in all the large Dominions. This should commend itself to our kinsfolk in Canada, Australia, and Africa, where enormous distances with but few, if any, railway facilities exist, and where aerial lines could be of immense benefit to scattered communities.

# AIRCRAFT WORK AT THE FRONT.

## OFFICIAL INFORMATION.

### British.

*General Headquarters, March 30th.*

"One of our aeroplanes, sent out yesterday, is missing."

*General Headquarters, March 31st.*

"Yesterday there was much aerial activity on both sides. A great deal of successful work was carried out by our airmen. Three of our machines are missing."

*General Headquarters, April 1st.*

"Yesterday there was considerable aerial activity on both sides."

*General Headquarters, April 2nd.*

"Two hostile aeroplanes were driven down behind the German lines. One of our machines sent out yesterday is missing."

*General Headquarters, April 3rd.*

"Yesterday one of our aviators shot down a German machine in the neighbourhood of Lens. Another aviator attacked and drove off five hostile machines after close combat with two of them."

### French.

*Paris, March 30th. Afternoon.*

"During yesterday one of our aeroplane squadrons dropped fifteen bombs of large calibre on the railway station of Metz-Sablon and five on that of Pagny sur Moselle."

"Last night two of our aeroplanes bombarded the station of Maizières-les-Metz."

*Paris, March 30th. Evening.*

"West of Nouvion an enemy aeroplane was brought down by our special guns. The machine fell five yards in front of our trenches. Its passengers were killed. We brought into our lines one of the machine guns of the aeroplane."

"In Champagne our special guns brought down a German aeroplane, which fell in the enemy lines near Ste. Marie-a-Py."

"In the course of the day our aviators displayed great activity. In Champagne, in the region of Dontrien, one of our pilots brought down a Fokker, which fell in flames in the enemy lines. In the region of Verdun five enemy aeroplanes were brought down in the immediate proximity of Limnes. Our aeroplanes were struck many times, but all our pilots returned unharmed."

*Paris, March 30th.*

"On March 28th Salonica was bombarded by an aerial squadron. Twenty Greek civilians were killed and twenty-five wounded. Our aviators despatched in pursuit of the enemy brought down three of his machines."

*Paris, March 31st. Evening.*

"A German aeroplane was brought down by our special guns. The machine fell in flames in the enemy lines to the north of Tahure."

"One of our pilots in the course of a lively aerial fight brought down an Aviatik, which fell in our lines at Soppe, region of Belfort."

*Paris, April 2nd. Evening.*

"At the Bois le Prêtre an Aviatik was brought down by our special guns. The machine fell into the German lines."

"On the night of April 1st and 2nd one of our bombarding squadrons dropped twenty-eight shells on the station of Etain and on the bivouacs in the neighbourhood of the village of Nantillois."

"On the same night three of our machines dropped twenty-two shells, which started many fires in the villages of Azennes and Brieulles-sur-Meuse."

"Yesterday our aviators brought down three enemy machines on the Verdun front, while two other German machines had to come down precipitately in the same region. Finally an observation kite was brought down in flames by one of our aeroplanes."

*Paris, April 3rd. Afternoon.*

"Last night a Zeppelin dropped eight bombs on the town of Dunkirk, causing material damage of slight importance. Two civilians were killed and four injured."

"Near Noyon a German aeroplane fell in our lines. The aviators were taken prisoners."

*Paris, April 3rd. Evening.*

"As a reprisal for the bombardment of Dunkirk by a Zeppelin last night thirty-one Allied aircraft dropped eighty-three bombs of heavy calibre on the enemy cantonments of Keyen, Eessen, Terrest, and Houthulst."

"On the night of April 2nd-3rd one of our air squadrons bombarded the station of Conflans. During the day numerous fights in the air took place successfully in the region of Verdun. Our aviators brought down four German machines. Other enemy aircraft were put to flight or forced to come to earth."

### Russian.

*Petrograd, March 29th.*

"Enemy aviators dropped bombs in the vicinity of the railway stations at Politzy and Louninetz."

*Petrograd, March 30th.*

"Our rifle fire brought down an enemy aeroplane in the Trembowla district. The two airmen, a captain and a lieutenant, were made prisoners."

*Petrograd, March 31st.*

"Enemy airmen dropped bombs in the region of the stations of Pogorieltzy, Politzy, Antonowka, and Luinetz, and of the village of Siniawka."

*Petrograd, April 1st.*

"One of our batteries brought down a German aeroplane, which was flying over our positions south of Lievensof. The machine was only slightly damaged. The aviators were taken prisoners."

### Italian.

*Rome, March 29th.*

"Yesterday a fourth enemy aeroplane was hit by our rifle fire and brought down near Vittoria. The two aviators were taken prisoners."

*Rome, March 30th.*

"From statements made by the captured Austrian aviators, the last air raid on Italian territory was intended to be a strategic operation of first importance. It failed completely."

"The objectives of the raid were our communications in the rear, and particularly the railway and road bridges across the Adige, Piave, Livenza, and Tagliamento, on the routes leading to the frontier. Moreover, it was planned to bombard some of our most exposed towns. Early on March 27th strong enemy air squadrons left four aerodromes."

"The squadron from Gardolo—six aeroplanes—ordered to bombard the bridges on the Adige, turned aside to attack Verona."

"Altogether 18 bombs were dropped. An alarm was given, and our batteries kept the raiders at such a distance that only five people were injured and a few buildings damaged. The enemy aircraft withdrew, abandoning the task assigned to them."

"The Pergine squadron—six machines—flew towards the bridges over the Piave and Meduna, and succeeded in dropping fifty bombs on the Priula Bridge (Piave), in addition to four on Pordenone, but, owing to our accurate machine-gun fire, missed the objects aimed at, and only caused insignificant damage to a roof of a house. Two enemy machines were struck by our fusillade and had to descend. The remaining machines fled."

"A still poorer result was achieved by the Aisovizza squadron—five aeroplanes—directed against the bridges over the Tagliamento. While flying over the Isonzo Plain one machine was brought down by our guns. The other machines only succeeded in dropping two bombs near the Delizia Bridge (Tagliamento), without causing damage."

"Finally the Pola squadron—twelve hydroplanes—directed against the railway bridges along the Mestre-Portogruaro line, was prevented from reaching its objective by our guns, and had to content itself with dropping bombs, which caused no damage, in the marsh district. Some machines which succeeded in reaching the Piave bridge dropped bombs and caused a small amount of damage. One hydroplane was brought down by our fire near Grado."

"Thus this raid, which was to have created havoc behind the Italian front and to have terrorised our people, ended in a real defeat for the enemy, who lost four powerful machines with eight aviators."

### German.

*Berlin, March 28th.*

"A German air squadron flew over Salonica and liberally pelted with bombs the new harbour and the petroleum harbour, as well as the Entente camp north of the town."

"In response to the enemy's aerial attack upon our positions near the Doiran Lake, we conducted yesterday a similar raid upon Salonica. Our flying squadron dropped numerous bombs upon the new harbour, the petroleum depôt, and the Entente encampment north of the town."

*Berlin, March 29th.*

"A German aerial squadron dropped bombs with good results on enemy railway depôts, especially on the railway station in the western part of Molodetzno."

*Berlin, March 30th.*

"In an aerial fight, which took place east of Bapaume, Lieutenant Immelmann put his 12th enemy aeroplane out of action, this being an English biplane. Its occupants are prisoners in our hands. The bombs dropped on Metz by the enemy caused the death of one soldier. Others were injured."

*Berlin, March 31st.*

"In the aerial fight in the region of Arras-Bapaume the English lost three biplanes. Two of their occupants are dead. Lieutenant Immelmann has thus accounted for his thirteenth enemy aeroplane."

*Berlin, April 1st.*

"Sofia Headquarters reports on March 30th that a German air squadron composed of fifteen aeroplanes, dropped 800 bombs on



part of Salonica and the Anglo-French camps on March 27th. An explosion was observed in a shed near the railway station and on an enemy ship. The enemy's aeroplanes attacked the Germans without success. Four of the enemy's aeroplanes were forced to land. The rest withdrew."

"Our battle aeroplanes have shot down four French aeroplanes—one each near Laons and Mogeville (in the Woevre), which fell within our line, and also one each near Ville-au-Bis and south of Haucourt, which came to earth direct behind the enemy line. Bombs were freely dropped on the French flying ground at Rosnay (west of Rheims)."

*Berlin, April 2nd.*

"Great activity has been displayed by the aviators of both sides, and numerous aerial battles terminated in our favour. In addition to the enemy aeroplanes brought down beyond our lines, an English

biplane was shot down near Hollebeke (north-west of Wervicq), and the occupants were taken prisoners. Ober-Lieutenant Berthold has by this success put out of action his fourth enemy aeroplane. Further, south-west of Lens, an enemy aeroplane was brought down in flames by a direct hit from our anti-aircraft guns. Bombs were freely dropped upon Dombasle-en-Argonne (west of Verdun) which is strongly garrisoned with troops, and the aerodrome of Belfort."

**Austrian.**

*Vienna, March 29th.*

"Our aviators dropped bombs on a few buildings and on the railways in Venice."

*Vienna, March 31st.*

"A squadron of our seaplanes dropped a great number of bombs on the enemy batteries at the mouth of the Sdobba (the left branch of the Isonzo)."

### From Other Sources.

Writing to the *Daily Telegraph* from Saez, on March 27th, Mr. W. T. Massey says:—

"The recent destruction by an air attack of an important reservoir was a military disaster to the enemy. But the resource and high military training of the flying corps have never been shown to better advantage in Egypt than in the brilliant raid yesterday on Bir-el-Hassana, the Turkish advanced base. It was arranged that the attack should be made from two points.

"It was planned that four machines should proceed from one point and two from another, the latter being timed to follow the former flight and complete the destruction which the four machines had begun. The whole scheme was carried out as arranged, and the enemy found that work which had taken months to prepare was destroyed in half an hour. The airmen dropped forty bombs on the reservoir, buildings and trenches with great effect, the description of an observer being that the camp presented the appearance of a volcano in eruption. When the work appeared to be finished a pilot noticed that some infantry were firing on the aviators. He swooped down upon them from behind, and, greatly daring, descended to within 200 ft. and opened machine-gun fire, scattering them across the desert. Some officers in a marquee were sent helter-skelter.

"All the airmen returned safely after a flight of 200 miles."

Writing regarding the air-raid on March 27th, the *Daily Mail* correspondent at Salonica says:—

"The operations of the French airmen against the five German aeroplanes which attacked this place to-day were even more successful than was supposed. The Frenchmen managed to cut off the Germans and fought a dozen engagements in the air.

"Four German aeroplanes were brought down. The first fell in Lake Amatovo (25 miles north-west of Salonica), and will be recovered and brought here. The second fell at Soho, to the north of Langaza (12 miles north-east of Salonica). The third fell at Likovan (22 miles north-east of Salonica); the fourth near Ghevgedi, in the enemy's lines."

The *Times* correspondent at Salonica says:—

"The people, baulked of their intended indignation meeting, joined in the funeral cortège of the three Jewish victims of the air-raid. The procession of several thousand persons thus formed indulged in furious shouts of 'Down with Germany! Down with Bulgaria! Down with the murderers!'"

The correspondent of the same paper at Athens says:—

"All the newspapers give expression to the popular indignation at the German air-raid on Salonica.

"Sharp protests have also been made in the Chamber. The Premier, in reply to Deputies who sought to elicit the intentions of the Government, declared that discussion of the matter would be against the interests of the country."

Mr. A. Beaumont, writing to the *Daily Telegraph* from Milan on March 29th, says:—

"This Austrian offensive was preceded by air raids, organised on a large scale. Squadrons of aeroplanes set out from Aisowizza, some flying over the Adriatic and then turning north into Venetian territory, and others heading direct for the district of Piave, Tréviso, and Cervignano. But before they had accomplished much, four of them were compelled to land, and their occupants were taken prisoners. A squadron of enemy aircraft appeared circling high over Susegana at sunrise on Monday morning, dropping bombs at haphazard over the quiet landscape, without doing any damage. The anti-aircraft guns got into action, and soon one of the enemy aeroplanes fluttered helplessly, and then came down rapidly between Susegana Station and Susegana Village. The two officers, its occupants, hurriedly destroyed it, causing a bomb to explode, and then they tried to escape across country, entering houses here and there, threatening the inhabitants with revolvers, and trying to obtain civilian disguises. They were overtaken, however, and as they showed fight an Italian officer fired a shot into the air, whereupon one Austrian surrendered, whilst the other

continued his flight. Being, however, also overtaken, he drew out a revolver and threatened to shoot, when an athletic Territorial resolutely pounced on him, threw him down, and disarmed him.

"Another Albatros was brought down near Campolongo. It was manned by a major and a junior officer, born at Genoa, of Austrian parents. The pilot said he was at about 3,000 ft. elevation when he was surrounded by exploding shells. The major was mortally wounded and the motor disabled. He was descending in a *vol plané*, trying several times to restart the motor without success, and when about to land he jumped from the machine, which saved his life. The Austrian major's legs were broken and his skull was injured, and he expired when being carried to a farmhouse.

"A third aeroplane landed near Vittorio, the motor being disabled by a shell. Seeing that they were unable to escape, the officers set fire to the benzine and burnt the machine. They also tried to escape, telling the peasants they were French aviators. They concealed themselves in a field, but were finally discovered, and one of them, resisting capture, was knocked down by a sergeant and disarmed.

"A fourth aeroplane fell into the sea, near Grado, and the machine and its occupants were captured by sailors. The rest of the aerial raiders were compelled to return to the Austrian lines. The Austrian offensive thus on land and air alike ended in failure."

Writing on the following day Mr. Beaumont said:—

"Four different French aviation squadrons flew on Sunday last successfully over the district between Püft, Altkirch, Sirenz, and Mulhausen. They were seen by passengers in trains between Freiburg and Leopoldshöhe, and caused no small amount of alarm, but, although more than thirty aeroplanes were seen and they were shot at with great violence by all the anti-aircraft guns along the Rhine, none of them were struck, and the four squadrons returned to their base with perfect safety."

The Salonica correspondent of the *Daily Mail* on March 29th reports:—

"To-day seven German aeroplanes attempted again to raid Salonica, but their route was barred by a French squadron that pursued the enemy as far as Serres (46 miles north-east of Salonica), where they abandoned the chase. Later the Germans returned towards the British lines at Orphanos (east of Salonica), where they threw bombs, wounded two men, and caused insignificant damage."

Writing on the same day, Mr. G. Ward Price says:—

"Last night five enemy biplanes dropped bombs on Stavros, on the extreme right of the British line. It is believed that at least one of the four machines brought down on Monday owed its end to being hit by one of our anti-aircraft guns. The aeroplane which fell at Suho, twenty miles north-east of here, was seen to lose part of a wing tip as the result of the bursting of an English shell. Over 500 rounds were fired at the raiders."

The *Times* Paris correspondent, writing on March 31st, says:—

"The last few days have been characterised by great aerial activity. Railway stations in the neighbourhood of Metz have been severely bombarded, and yesterday there was much fighting in the air above Verdun. Five German machines were brought down without a single French casualty, while in Champagne a Fokker fell in flames into the German lines. The young airman of next year's class, Degallard, who recently brought down a Fokker in the course of his first flight at the front, has received the Military Medal and the War Cross."

The *Foehrer Zeitung* states that on March 25th two Danish fishermen from Nebel who were cutting seaward observed a large seaplane resting on the water near the shore and apparently unable to rise. They reported their discovery to the military, and, having taken a small detachment of soldiers on board their boat, went to investigate. The hydroplane proved to be British, and was carrying three men, who tried hard to make the machine rise and thereby escape. The propeller, however, refused to act, whereupon the three men surrendered to the Danish authorities.



# CORRESPONDENCE.

## Dope Poisoning Troubles.

[1918] We have noted with interest your article on "Dope Poisoning Troubles" in your issue of March 30th.

We quite agree with you that it is time that something was done to prohibit the use, as has already been done by the French Government, of dopes containing tetrachlorethane, as the very extensive ventilating precautions in the doping shops do not appear to have attained their object; and since your issue, for instance, there is still a further case of tetrachlorethane poisoning reported as having occurred in the West Ham district.\*

You state in your article that you have reason to believe that with this ingredient (tetrachlorethane) as a part of the dope, greater life for the fabric is obtained. This may be true of certain types of non-poisonous dope, but in the case of "Titanine," we say without a shadow of doubt that it is at least as efficient—if not more efficient—than any poisonous dope on the market, if used as directed.

THE BRITISH AEROPLANE VARNISH CO., LTD.,  
D. C. HUTCHINSON, Manager London Branch.

[\* The case of Ellen Jane Clark.—ED.]

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## An Offer by Lieutenant Gran.

IN view of his experience with the late Capt. Scott's Antarctic expedition, Lieut. Trygoe Gran, late of the Norwegian Navy, who has offered to join any relief expedition in connection with Sir E. Shackleton, should be able to give useful assistance. It will be recalled that Lieut. Gran flew from, on his Blériot, Cruden Bay, Aberdeenshire, to Klep, Norway, on July 30th, 1914.

## Another Apology for Switzerland.

THE following *communiqué* was issued in Berne on March 31st: This morning, at five o'clock, two foreign aeroplanes, whose nationality has not yet been established, flew over Porrentruy, and threw five bombs on the town, causing, however, little damage. An inquiry has been opened.

It was subsequently ascertained that the aeroplanes were German, and a protest by the Swiss Minister at Berlin drew an apology from the German Government. Through its representative at Berne, it has informed the Swiss Federal Council that the result of the inquiry has shown that the aviators who dropped bombs on the Swiss village of Porrentruy on March 31st were German who had completely lost their bearings, and believed themselves to be over Belfort. The Imperial Government expresses to the Federal Council its deepest regrets, and informs it that the aviators who were responsible will be punished and removed. The German Government suggests that the authorities of the two countries should examine the question closely in order to discover whether it is not possible, by means of more visible demarcation on the frontier or in some other way, to prevent any repetition of such regrettable incidents. The question of compensation for the damage done is reserved.

## Fatal Accident at Upavon.

AN inquest was held at the Central Flying School, Upavon, on Monday relative to the death of Lieut. Geoffrey Wynne Bavin, Lincolnshire Regt. who was killed while flying over Upavon Downs on Saturday morning. No one witnessed the accident, but he was seen beginning a descent from a height of 2,000 feet. The machine was a new one which had arrived from Farnborough the day before. A verdict of "Accidental Death" was returned.

## Death of Lebourhis.

THE *Journal* announces the death of the aviator, Sub-Lieut. Lebourhis, after a fight near Verdun. It was Lebourhis who first threw himself out of an aeroplane, descending to the ground with the aid of a parachute, and he later went in for looping the loop. On mobilisation he joined the Army as a private soldier and died a sub-lieutenant and a Chevalier of the Legion of Honour.

## Germany's Aircraft Alloys.

IN his presidential address at the Institute of Metals last week, Dr. G. T. Beilby said that in the production of airships, Germany probably had at her command superior alloys of which we had no knowledge.

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## PUBLICATION RECEIVED.

*Airwar: How to Wage It.* By N. Pemberton-Billing. London: Gale and Polden, Ltd. Price 1s. net.

NOTE.—Owing to pressure upon our columns this week, some of our regular features have had to be held over. Several Advertisements have also been crowded out.—Editor, "FLIGHT."

## Glue for Seaplane Propellers.

WE learn that the Admiralty, after conducting the most exhaustive tests with every class of adhesives, for the purpose of ascertaining the most suitable and reliable for the manufacture of naval aeroplane and seaplane propellers, have now "approved" "Croid" (extra strength quality), which we understand has been used successfully for propellers for military machines for some time past. The great strain to which propellers are subjected and the constant variation of temperature and atmospheric conditions call for something beyond the powers of an ordinary glue, and the makers of "Croid"—the Improved Liquid Glues Co., Ltd., of Great Hermitage Street, London, E.—are to be congratulated on having produced an adhesive which has successfully passed the severe tests which the Admiralty especially have need to apply.

## A Pickles-Prodgers Development.

SO great has become the demand for the services of Messrs. Pickles and Prodger for testing new machines that it has been found necessary to install a business manager at their Piccadilly offices to deal with inquiries, &c., when both partners, as is nearly always the case, are away from town. As the man chosen for this capacity is an old hand at matters relating to the business side of aviation—Mr. Bernard Isaac—good organisation will doubtless enable Pickles and Prodger to get through even more work in the future than they have in the past.

## More A.I.D. Inspectors Wanted.

THERE are still vacancies for Examiners in the Aeronautical Inspection Department. The pay, including allowances, is £3 15s. rising to £4 5s., with prospects of further advancement. Candidates should preferably be gentlemen with a good theoretical education, practical experience in engineering, and a working knowledge of scientific measuring instruments. Preference will be given to those who are unlikely to be called up for military service, and who are not now usefully employed on War work. Applications should be made to the Chief Inspector, Aeronautical Inspection Department, War Office, 13, Albemarle Street, London, W.

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## COMPANY MATTERS.

### Sunbeam Motor Car Co., Ltd.

THE Sunbeam Motor Car Co., Ltd., of Wolverhampton, the builders of the famous Sunbeam aero engine, have declared an interim dividend of 5 per cent., free of income tax, for the half-year ending February 29th, 1916.

### NEW COMPANIES REGISTERED.

**Society of British Aircraft Constructors, Ltd.,** St. Stephen's House, Victoria Embankment, Westminster.—A company, limited by guarantee, with 100 members, each liable for £3 in the event of winding-up, to encourage, promote and protect the British aircraft industry; to protect the general interests of companies, firms, and persons engaged therein, &c. The management is vested in a Council, the first members of which are: Sir Vincent Caillard (Wolseley Motor Car Co., Ltd.), R. O. Cary (Sopwith Aviation Co., Ltd.), Sir Arthur T. Dawson (Beardmore and Co., Ltd.), H. Wade Smith (British and Colonial Aeroplane Co., Ltd.), G. Holt Thomas, H. F. Wood (Vickers, Ltd.), Howard T. Wright (J. Samuel White and Co., Ltd.). Secretary, C. V. Allen.

**Stanley Aviation Co., Ltd.,** Stanley Works, Langton Road, Cricklewood, N.W.—Capital £1,000, in £1 shares. Manufacturers of and dealers in all kinds of flying machines and component parts thereof, maintainers of hangars, garages, sheds and aerodromes, mechanical engineers, &c. First directors, Joseph Andre, Maurice Phinstag, and Arkadius Gunsbourg.

**Wells Aviation Co., Ltd.,** 10A, Elystan Street, Chelsea, S.W.—Capital £10,000, in £1 shares. Secretary, F. W. Doyle Jones.

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